MANITOBA AEROSPACE TECHNOLOGY

CAPABILITY DIRECTORY

1991

Manitoba
Industry, Trade
and Tourism

91-06923/

ACQUIRING THE BENEFITS OF THE CANADIAN SPACE PROGRAM

THE CANADIAN SPACE PROGRAM, a multi-point approach to active participation in the development of the U.S. space station, communications, remote sensing and space science, offers the potential for significant benefits to Canadian industrial interests of all sizes. In addition, a wide variety of international commercial space projects offers new business opportunities.

For many industrial concerns, the concept of participation in space programs is novel, and perhaps intimidating.

However, a careful examination by industry of the Canadian and international space programs reveals a broad range of industrial opportunities with subsequent industrial spinoff benefits, which should leave the smaller industrialist enthused about this new and challenging venture.

With that in mind, the Manitoba government, through the Department of Industry, Trade and Tourism, has launched the Manitoba Aerospace Technology Program, to encourage and assist Manitoba industry in the pursuit of space program-related contract work, to maximize the benefits that flow from such a prodigious venture as the space program, and to demonstrate to program directors the diversity and capabilities of Manitoba's industrial sector.

The program is assisting Manitoba industry by making available all information pertaining to the federal, NASA and other program requirements, as well as information integral to the proper completion of tendering applications, and by assisting industry in liaising with subcontractors.

The full range of departmental services and personnel is available to assist industry in its endeavours.

It is the intent of the program to familiarize space contractors with Manitoba's broad history of involvement in the aerospace industry. And the program will show Manitoba's well-deserved reputation for quality, value, efficiency and excellence in all facets of aerospace work.

The program will show how Manitoba industry and government have built a solid and highly technical infrastructure to serve those seeking or distributing space contract work. Manitoba has the services and facilities needed, ranging from business and industrial incubators, to testing laboratories, to technical and research support, as well as departmental entrepreneurial counselling services.

This publication is an illustration of the potential of Manitoba industry, showing contractors and subcontractors, and Manitoba industrial interests as well, the scope and expertise available in Manitoba.

It is the belief of the Manitoba Aerospace Technology Program that this document will provide impetus to further investigation and inquiries by contractors, subcontractors, other industrial interests and entrepreneurs, and will help in the networking process, so vital to the success of all Manitoba industry.

For Manitoba, the space program represents an opportunity to maximize the potential of the province's aerospace industry, and to encourage its greater diversification.

For the contractors and subcontractors associated with the Canadian Space Program, this is an opportunity to maximize the value and quality of contract work.

Quite simply, all of Canada benefits from Manitoba's full and equitable participation in the space program.

MANITOBA AEROSPACE TECHNOLOGY PROGRAM

A BLACK BRANT XII ROCKET, DEVELOPED AND MANUFACTURED BY BRISTOL AEROSPACE OF WINNIPEG, LAUNCHED FROM WALLOPS ISLAND, VIRGINIA, ACHIEVED A HEIGHT OF 1600 KILOMETRES

FOR MORE THAN FIFTY YEARS, the Province of Manitoba has been a proud and dynamic contributor to the Canadian aerospace industry, consistently demonstrating our capability and competency on the leading edge of aerospace-related technological developments.

A glance at Manitoba's track record in aerospace reveals pioneering and innovative advances in rocket design, in upper atmospheric balloon experimentation, in satellite structural and component work, in remote sensing and data transmission, and in propellants, exotic material fabrication, and biotechnology.

Manitoba's aerospace sector remains a vibrant and innovative economic performer, and is well positioned to benefit from many of the peaceful applications of space technology, including communications, environmental monitoring, remote sensing and data analysis.

The Manitoba Aerospace Technology Program is in place to encourage and assist the province's industrial, business and educational sectors in acquiring and maximizing benefits flowing from the Canadian Space Program, in order to bring greater industrial diversification and economic growth to Manitoba.

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MacPlan
Manitoba Remote Sensing Centre
Manitoba Telephone System
Prairie Agri Photo Ltd.
Visual Marketing Ltd.
WeatherTec Services Inc.

ELECTRONICS/BIOTECHNOLOGY/SOFTWARE

ABI Biotechnology Inc.
Advanced Applications Inc.
Bioquest International
Canadian Institute of Industrial Technology
CanMag, Canadian Electromagnetics Ltd.
Class Software
Clinicom Computing Services International Inc.
Cortelco Canada Inc.
Cybershare Management Inc.
Export Packers Co. Ltd.
Homestead Computer Services Ltd.
Hughes Aircraft of Canada Limited
ICAM Technologies Corporation
Integrated Engineering Software Ltd.
Iris Systems Inc.
Kraus Industries Ltd.
Linear Systems Ltd.
Mind Computer Products
MONAC International Corporation
Northern Aero Industries Limited
Pulse Engineering Ltd.
Quantic Laboratories Inc.
S.D.S. Technical Devices Ltd.
SHL Systemhouse Inc.
SOTA Electronics Corporation
UNISYS Canada Inc.
Universal Robotics Corporation
Vansco Electronics Ltd.

METALS & COMPOSITES/FABRICATION

Advanced Composite Structures Inc.
Aerotech International Incorporated
Boeing of Canada Ltd.
Canadian Tool & Die Ltd.
Composite Technology (Canada) Ltd.
Cormer Group Industries Inc.
Custom Steel Products Inc.
Dimatec Inc.
EPT Manufacturing Ltd.
Fort Garry Industries Ltd.
Franklin Enterprises Ltd.
Heli Fab Ltd.
Inventronics Limited
K & S Tool & Die Ltd.
Precision Metalcraft Inc.
Spectrum Manufacturing Co. Ltd.
Standard Aero Limited
Standard Machine Works Ltd.
Technical Products International Ltd.
Vanguard Industries

MATERIALS/COATINGS/HEAT TREATING

Ancast Industries Ltd.
Cadorath Plating Co. Ltd.
Guertin Bros. Coating & Sealants Ltd.
National Coating Technologies Inc.

ENGINEERING CONSULTANTS/R&D LABS

Aero Consulting Services Ltd.
A.J.P. Engineering Services
Cryodynamics Manitoba Inc.
E.B. Systems Ltd.
Glantz, Lester M., P. Eng.
Infotech Manitoba
Institute for Technological Development
Kayley Group, The
Ketas Canada Inc.
Manitoba Research Council
Midwest Detroit Diesel-Allison
Red River Community College
South Winnipeg Technical Centre
Spiece Associates Inc.
Tarry & Associates Ltd.
Technical Research Investigations & Development (TRIAD) Ltd.
UMA Engineering Ltd.
Unies Ltd.
University of Manitoba — Accelerator Centre
University of Manitoba — Department of Mechanical Engineering and Industrial Engineering Program
University of Manitoba — Geophysical Imaging Laboratory
University of Manitoba — Institute for Technological Development
West-Can Inspection Limited
Yuill, G.K. & Associates Ltd.

PROJECT MANAGEMENT

Atomic Energy of Canada
Bristol Aerospace
Southport Aerospace Centre Inc.
Wardrop Engineering Inc.

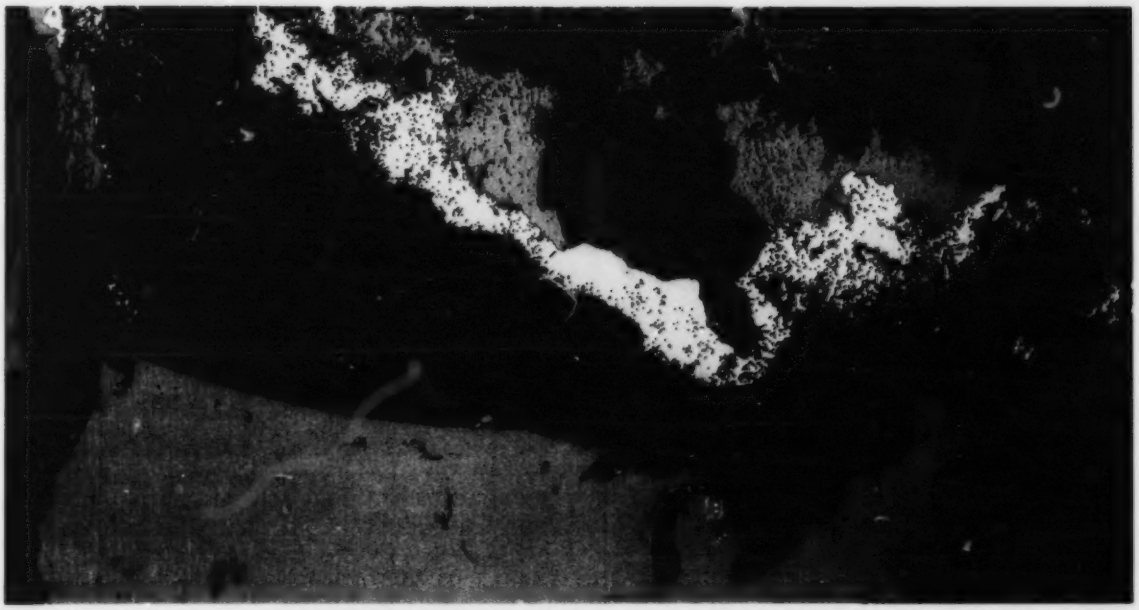
MANITOBA AEROSPACE COMPANY MATRIX

Note: ● Indicates primary strength (as it relates to space programs)
○ Indicates other strong capabilities

	Remote Sensing Communications SIC - 366, 489, 737	Electronics Biotechnology Software SIC - 3573, 367, 7391, 737	Metals & Composites Fabrication SIC - 339, 282, 307, 349	Materials Coatings & Heat Treating SIC - 265, 3299, 332, 336, 339, 346, 347	Engineering Consultants R&D Labs SIC - 38, 7397, 891, 892	Project Management SIC - 372, 376, 966
31ST FRAME VIDEO PRODUCTIONS (489)	●					
ABI BIOTECHNOLOGY INC. (7391)		●				
ADVANCED COMPOSITE STRUCTURES (282)			●	○		
ADVANCED APPLICATIONS INC. (7391)		●				
AERO CONSULTING SERVICES LTD. (891)					●	
AEROTECH INTERNATIONAL INCORPORATED (3629)			●		○	
AIRQUEST RESOURCE SURVEYS LTD. (739)	●					
A.J.P. ENGINEERING SERVICES (891)					●	
ANCAST INDUSTRIES LTD. (332)				●		
ATOMIC ENERGY OF CANADA (966)		○	○	○	○	●
BIOQUEST INTERNATIONAL (7391)		●				
BOEING OF CANADA (372, 376)			●			○
BRISTOL AEROSPACE (372, 376)	○	○	○	○	○	●
CADORATH PLATING CO. LTD. (347)				●		
CANADIAN TOOL AND DIE LTD. (349)			●			
CANMAG, CANADIAN ELECTROMAGNETICS LTD. (349)		●	○			
CANADIAN INSTITUTE OF INDUSTRIAL TECHNOLOGY (966)		●	○		○	○
CLASS SOFTWARE (737)		●				
CLINICOM COMPUTING SERVICES (737)		●				
COMPOSITE TECHNOLOGY CANADA LTD. (282)			●			
CORMER GROUP INDUSTRIES INC. (349)			●			
CORTELCO CANADA INC. (366)		●				
CRYODYNAMICS MANITOBA INC. (358)			○			
CURLE GEOGRAPHIC SERVICES (737)	●					
CUSTOM STEEL PRODUCTS INC. (349)			●			
CYBERSHARE MANAGEMENT INC. (737)		●				
DIMATEC INC. (349)			●			
E.B. SYSTEMS LTD. (737)		○			●	○
ELECTROMAGNETIC SENSING AND INTERPRETATION (737)	●					
EM WAVE TECHNOLOGY LTD. (366)	●	○				
EPT MANUFACTURING LTD. (349)			●			
EXPORT PACKERS CO. LTD. (7391)		●				
FORT GARRY INDUSTRIES LTD. (347)			●	○		
FRANKLIN ENTERPRISES LTD. (349)			●			
GPT (CANADA) (366)	●	○				
GLANTZ, LES (891)					●	
GUERTIN BROS. COATING & SEALANTS LTD. (285)				●		
HELI FAB LTD. (349)			●			
HOMESTEAD COMPUTER SERVICES LTD. (737)	○	●				
HUGHES AIRCRAFT OF CANADA (38)		●			○	○
ICAM TECHNOLOGIES CORPORATION (737)		●				
INFOTECH MANITOBA (892)					●	
INSTITUTE FOR TECHNOLOGICAL DEVELOPMENT (892)					●	
INTEGRATED ENGINEERING SOFTWARE LTD. (737)		●				
INVENTRONICS LTD. INTERNATIONAL (367)		○	●			
IRIS SYSTEMS (891)		●			○	
KAYLEY GROUP, THE (739)			○	○	●	
KETAS CANADA INC. (891)					●	
K & S TOOL & DIE LTD. (349)			●			
KRAUS INDUSTRIES LTD. (367)		●				
LINEAR SYSTEMS LTD. (737)		●				
MACPLAN (737)	●					
MANITOBA RESEARCH COUNCIL (891)		○		○	●	
MANITOBA REMOTE SENSING CENTRE (737)	●					
MANITOBA TELEPHONE SYSTEM (366)	●					
MIDWEST DETROIT DIESEL-ALLISON (891)					●	
MIND COMPUTER PRODUCTS (737)		●				
MONAC INTERNATIONAL CORP. (38)		●			○	
NATIONAL COATING TECHNOLOGIES (347)				●		
NORTHERN AERO INDUSTRIES LTD.		●				
PRAIRIE AGRI PHOTO LTD. (737)	●					
PRECISION METALCRAFT INC. (349)			●			
PULSE ENGINEERING LTD. (367)		●				

MANITOBA AEROSPACE COMPANY MATRIX (Cont'd)

	Remote Sensing Communications SIC - 366, 489, 737	Electronics Biotechnology Software SIC - 3573, 367, 7391, 737	Metals & Composites Fabrication SIC - 339, 282, 307, 349	Materials Coatings & Heat Treating SIC - 285, 3299, 332, 336, 339, 346, 347	Engineering Consultants R&D Labs SIC - 38, 7397, 891, 892	Project Management SIC - 372, 376, 966
QUANTIC LABORATORIES INC. (367)		●				
RED RIVER COMMUNITY COLLEGE (966)		○	○		●	
S D S. TECHNICAL DEVICES LTD. (367)		●				
SHL SYSTEMHOUSE INC. (737)		●				
SOTA ELECTRONICS CORPORATION (737)		●				
SOUTH WINNIPEG TECHNICAL CENTRE (966)					●	○
SOUTHPORT AEROSPACE CENTRE INC.						●
SPECTRUM MANUFACTURING CO. LTD. (349)		○	●	○		
SPIECE ASSOCIATES INC. (891)					●	
STANDARD AERO LIMITED (372)			●	○		○
STANDARD MACHINE WORKS LTD. (349)			●			
TARRY & ASSOCIATES LTD. (891)					●	
TECHNICAL PRODUCTS INTERNATIONAL LTD. (366)		○	●	○		
TECHNICAL RESEARCH INVESTIGATIONS & DEV. (TRIAD) LTD. (891)		○		○	●	
UMA ENGINEERING LTD. (891)	○	○			●	○
UNIES LTD. (891)	○	○			●	
UNISYS CANADA INC. (367)		●			○	
UNIVERSAL ROBOTICS CORPORATION (3559)		●				
UNIVERSITY OF MANITOBA, ACCELERATOR CENTRE (892)					●	
U OF M, DEPT. OF MECH. ENG. AND IND. ENG. PROGRAM (966)					○	●
UNIVERSITY OF MANITOBA, GEOPHYSICAL IMAGING LABORATORY (892)		○			●	
U OF M, INSTITUTE FOR TECHNOLOGICAL DEVELOPMENT (892)					●	
VANGUARD INDUSTRIES (282)			●			
VANSCO ELECTRONICS LTD. (367)	○	●			○	
VISUAL MARKETING LTD. (489)	●					
WARDROP ENGINEERING INC. (966)	○	○			○	●
WEATHERTEC SERVICES INC. (737)	●					
WEST-CAN INSPECTION LIMITED (7397)					●	
YUILL, G.K. & ASSOCIATES LTD. (891)					●	○



LAND COVER MAP OF CANADA PRODUCED BY THE MANITOBA REMOTE SENSING CENTRE SURVEYS AND MAPPING BRANCH

UNIVERSITY OF MANITOBA CAPABILITIES MATRIX

A key component of Manitoba's strength in aerospace technologies resides in the Province's educational institutions. The University of Manitoba, through the Institute for Technological Development (ITD), is extremely active in the development and use of technology in Manitoba. In order to facilitate greater interaction between university researchers and the aerospace community, ITD has compiled the following summary of resident academic talents relevant to the industry.

Note: ● Indicates primary interests
○ Indicates secondary interests

AEROSPACE INDUSTRY SECTORS

		Space Vehicles Systems Technology	Aircraft/Missiles Systems Technology	Materials	Telecommunications Instrumentation	Guidance and Control systems	Remote Sensing Technology	Robotics and Automation	Life Support	Habitation Factors
MECHANICAL/CIVIL/ AGRI ENGINEERING	BRITTON, M.G. (RON)	●						●	○	
	CAHOON, JACK R.			●						
	CHATURVEDI, MAHESH C.	●	●	●						
	HAN, RAY P.S.	●	●			○		●		
	JENNESS, JOHN						●	●		
	POLYZOIS, DIMOS	●		●						
	POPPLEWELL, NEIL							●		
	RIZKALLA, SAMI	●	●	●						
	RUTH, DOUGLAS	●	●							
	TANDON, KEDAR N.	○		●						
	TRUPP, ALLAN C.	●	●							
ELEC & COMP ENGINEERING	BRIDGES, ERNEST				●					
	BRIDGES, G.				●					
	JAKOBSCHUK, A.							●		
	McLAREN, P.G.	●	●							
	MENZIES, R.W.	○								
	RAGHUVEER, MADDAKERE R.			●						
	SHAFAI, LOTFOLLAH				●		●			
	THOMSON, DOUGLAS, J.			●						
SCIENCES	BERRY, THOMAS G.	●	●			●				
	DAVIDSON, N.E.						●			
	GORDON, RICHARD				●		○	○	○	
	McKEE, JASPER S.C.	○		○			○			
	MOON, WOOIL M.				○		●			
	TABISZ, GEORGE C.						●			
	WALTON, DESMOND	○	○							
MEDICINE/ PHARMACY	BERCZI, I.								○	
	DUKE, P.C.				●		●		●	●
	MURRAY, R.P.				○					○
	SIMONS, KEITH J.								●	
	SITAR, D.								●	
	WILKINS, JOHN A.								○	
HUMAN EC./ AGRI	BRUCE, V.								●	
	KING, MARTIN W.			●					●	
	MALCOLMSON, LINDA								●	
	PRITCHARD, M.K.								●	
	SHANNON, ELIZABETH				○				○	
	VESSEY, KEVIN J.								●	

31ST FRAME VIDEO PRODUCTION

404-24 Arden Avenue
Winnipeg, Manitoba
R2M 2J9 Ph: (204) 256-1924

Contact:
Robert Gereghty, President

Description:
31st Frame Video Production is a company that specializes in the production of:

- Television Commercials
- Corporate and Promotional Videos
- Instructional Videos

31st Frame's production team is comprised of a nationwide network of Broadcast and Corporate video specialists. The team provides creative and technical expertise throughout each stage of production — from concept to completion. The company offers a full range of video production services.

31st Frame features the following State of the Art equipment:

- Betacam Cameras
- Cinema Products Steadicam II
- Digital Video Effects
- Computer Graphics and Animation
- Computerized Editing
- Midi — Computerized Sound Scoring

Quality Standards:
Broadcast Quality

Major Clients:
Cross Cultural Consulting Inc., Canadian Physiotherapy Association, Drug Free Canadians Inc., Heart and Stroke Foundation of Manitoba

ABI BIOTECHNOLOGY INC.

40 Scurfield Blvd.
Winnipeg, Manitoba Ph: (204) 488-4090
R3Y 1G4 Fax: (204) 488-4063

Contact:
Dr. A.D. Friesen, President, CEO
Dr. J. Langstaff, Vice President, Research

Description:
ABI is a research, development and manufacturing pharmaceutical company founded in 1984 by A.D. Friesen. It is involved in the production of protein-based pharmaceuticals through the biotechnologies of genetic engineering and monoclonal antibody technology.

ABI has two subsidiary companies, Rh Pharmaceuticals Inc., a blood fractionation company and Kam Scientific a manufacturing and marketing subsidiary of non-pharmaceutical products.

Facilities:
Fully equipped 14,000 sq. ft. laboratory.

Major Clients:
Ortho Diagnostics Systems Inc., Toronto, Waitaki International Biosciences, Toronto, Winnipeg Rh Institute, Winnipeg, Apotex Inc., Toronto, Bio-Technology General Corp., New York.

Employees: 94

ADVANCED APPLICATIONS INC.

5-1329 Niakwa Rd.
Winnipeg, Manitoba
R3L 2J5 Ph: (204) 254-4707

Contact:
Dr. Brian D. Prystupa, President

Description:
Advanced Applications is a specialized operation, developing prototypes of high technology wheelchairs, as well as other mobilization aids for the handicapped. Advanced is interested in the development of programming concepts for high level control of machines in space.

Featured Equipment:
Computer programming concepts based on insect/animal learning and intelligence.

Facilities:
Office CAD computer and subcontracted facilities.

Employees: 2

ADVANCED COMPOSITE STRUCTURES, (1990) INC.

1686 Dublin Avenue
Winnipeg, Manitoba Ph: (204) 694-1942
R3H 1A8 Fax: (204) 694-3524

Contact:
Mr. Bruce Anning, Plant Manager
Mr. Derrick Lowe, Production Manager

Description:
Advanced Composite Structures, was started in 1988 and is a wholly Canadian owned company located in Winnipeg. A.C.S. is a company dedicating its expertise to the repair, overhaul and remanufacturing of various advanced fibre reinforced composite and metal-bonded components as they relate to the aerospace sector. A.C.S. also specializes in the application of advanced custom coatings, including Powder coatings, in accordance with Military and customer specifications.

Quality Standards:
D.O.T. Repair Station Approval number: 89-39
Meets AQAP-4 Standards

Featured Equipment:

- Composites — Bonding Press, Curing Oven, Temperature Controlling Units, Vacuum-curing, Core milling.
- Custom Coating — Semidown draft, pressurized, concept-cure paint booth, Automated paint line, 5-stage pre-clean line with iron phosphate conversion coating, Bake oven, Nordson reclaim powder booth.

Facilities:
12,000 square feet
2,000 sq. ft. humidity and temperature monitored clean room

Major Clients:
Boeing Canada Technology Ltd., Unisys Canada, Inc.

Employees: 30

A.E.C.L.

Pinawa, Manitoba
R0E 1L0

Ph: (204) 753-2311
Telex: 07-57553
Fax: (204) 753-8404

Contact:
Mr. C.A. McDowall or
Mr. C.W. Zarecki — Commercial Operations Managers

Description:
AECL at Pinawa, Manitoba, is a diverse research and development establishment with a broad range of technological capabilities well suited to a wide variety of space program projects. Some of these capabilities include: space power conversion system development; materials and component testing and analysis; prototype equipment design and construction; materials development for special space applications; analysis of biological and materials effects of space environment; and algorithm development and mathematical modelling related to space sciences.

Facilities:
- Fracture Mechanics Centre — offering complete metallurgical and mechanical testing of ferrous and non-ferrous metals, ceramics, glasses, rocks and composites.
- Analytical Science — offering a complete range of analytical facilities for inorganic, ultra-trace and environmental analysis as well as surface analyses and microscopy.
- Irradiation Facilities — to simulate space environment conditions and effects on materials and components.
- Hydrostatic Test Facility — for container and component testing.
- Containment Test Facility — for combustion analysis of flammable gaseous and dust mixtures and for explosive atmosphere testing.
- Internal Friction Laboratory — to develop, test and apply high damping materials in engineered systems to suppress mechanical noise and vibration.
- Large Machine Shop - outfitted with modern equipment for manufacture of prototypes, tools and components.

Expertise:
- Materials testing, examination and characterization, as well as fracture and failure analysis.
- Experience in power conversion systems suitable for space applications using either photovoltaic, radioisotopic or nuclear reactor power systems.
- Experience in determining the effects of Radiation and Atomic Oxygen on materials and living systems and recommending methods to alleviate those effects.
- Biophysical research with experience in virology, cell biology, radiobiology, biochemistry and biophysics.
- Experience in joint-venture and partnership arrangements.
- Quality Control and Non-Destructive Examination Services using full range of examination techniques.
- Use of radiation curing to produce unique plastic and composite materials for the space industry.
- Algorithm development and mathematical modelling to solve problems in mathematical and applied science relating to space systems.

Employees: 1000

AERO CONSULTING SERVICES LTD.

1845 St. Matthews Avenue
Winnipeg, Manitoba
R3H 0A8

Ph: (204) 783-5402
Fax: (204) 783-5436

Contact:
Lane Helms, Vice President, Engineering

Description:
Aero Consulting Services Ltd. provides design, development, certification and testing services for modification and repair of aircraft. ACS has full engineering design and analysis capabilities including CAD, Finite Element, Aerodynamic, Aeroelastic Analysis, Flight Test Planning and data reduction. Through a subsidiary company, Aero Consulting International, ACS provides fracture mechanics and damage tolerance analysis.

ACS staff includes a Transport Canada DAR, AME cat B, and FAA approved DER in structures, systems, powerplants and flutter.

ACS has obtained Transport Canada and FAA approval for major modifications to many aircraft. ACS is capable of assuming full responsibility for Transport Canada approval for FAA certification of major aircraft modification projects, or provides engineering services in specialized areas to assist a client's engineering department.

Featured Equipment:
8 station Professional CAD system, NASTRAN Finite Element Analysis, Microfilm/Microfiche capability

Facilities:
6,000 sq. ft. office space & 6,000 sq. ft. shop & lab

Major Clients:
Boeing of Canada Ltd., Bristol Aerospace Ltd., Air Ontario, Defence Research Establishment, Suffield

Employees: 18

ABI BIOTECHNOLOGY INC.

AEROTECH INTERNATIONAL INCORPORATED

100 Eagle Drive
Winnipeg, Manitoba
R2R 1V5

Ph: (204) 633-1999
Telex: 07-55272
Fax: (204) 694-1612

Contact:
Mr. Carl Meub, General Manager

Description:
Aerotech International Incorporated is a leading supplier and manufacturer of portable heaters and ventilating equipment, including Herman Nelson Heaters, ducting and a complete line of aerospace and airline ground support equipment and services. Aerotech supplies over 100 countries worldwide, and has dealers/distributors in offices around the world.

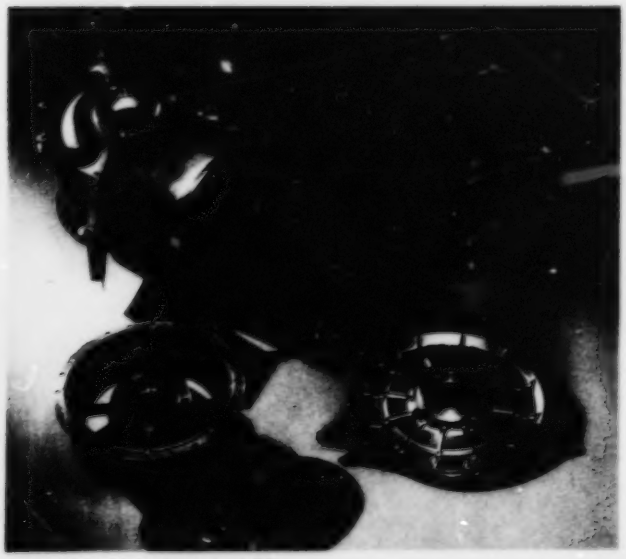
Aerotech International Incorporated was founded in 1973 by P.R. Sigurdson.

Facilities:
12,000 sq. ft. assembly shop, 10,000 sq. ft. machine and paint shop; 10,000 sq. ft. warehouse.

Subsidiaries:
1 — Spencer, Wisconsin

Major Clients:
NATO, Major Airline Companies, Government of Canada, Government of the United States

Employees: 30



CADORATH PLATING CO. LTD

AIRQUEST RESOURCE SURVEYS LTD.

15 Trottier Bay
Winnipeg, Manitoba
R3T 3R3

Ph: (204) 284-3101
Fax: (204) 453-8608

Contact:
Mr. W. Sapielo, President - Marketing

Description:
Airquest Resource Surveys Ltd. is engaged primarily in the procurement of large format aerial photography using precision aerial survey cameras and black and white (panchromatic), colour and false-colour (infra-red) films. The overlapping photographs provide for stereoscopic imagery used by Airquest and various government agencies for the production of topographic mapping. Airquest is equipped with "state of the art" technology for the production of mapping in digital formats and the plotting of maps, cross-sections, profiles etc. using a WILD TA10 precision flat-bed plotting table. The Company has a photographic laboratory for the processing of aerial films, for contact printing and the production of large format copies from aerial photography and photo-mosaics.

Featured Equipment:
- WILD A8 stereoplotting instruments
- Data General MV7800 computer
- IBM/MS/DOS Micros
- Tektronics graphic display terminals
- Wild TA10 automatic flatbed plotting table
- Cessna 310 L photographic survey aircraft
- WILD RC8 9" x 9" photographic survey camera
- 40" x 60" horizontal copy camera
- automated film processing

Facilities:
6,000 sq. ft. in Fort Garry Industrial Park

Major Clients:
Federal and Provincial Government Agencies, Environmental Protection Agencies, Consulting Engineers and Planners, Forest Management Companies, Major Mining Companies

Employees: 17

A.J.P. ENGINEERING SERVICES

203-675 Pembina Highway
Winnipeg, Manitoba
R3M 2L6
Ph: (204) 477-4405
Fax: (204) 477-4890

Contact:
Mr. A.J. Pankratz, President

Description:
A.J.P. Engineering Services provides a broad range of technical services to industrial clients in Northern Ontario, Manitoba & Saskatchewan. The company specializes in welding technology and weld inspection. It has worked to military standards for aerospace clients.

Quality Standards:
ASME, CSAZ299, Company certified to CSA W178

Facilities:
Autocad design/drawing systems, word processing.

Major Clients:
Euroway, Heli-Fab, Dominion Engineering, Suncor Transport Canada, Westeel, Port Arthur Shipbuilding, Coastal Steel Construction Ltd.

Employees: 4

ANCAST INDUSTRIES LTD.

1350 Saskatchewan Avenue
Winnipeg, Manitoba
R3E 0L2
Ph: (204) 786-7911
Fax: (204) 786-2548

Contact:
Mr. C.R. McBain, P.Eng., President
Mr. Mario Perrino, Sales Manager

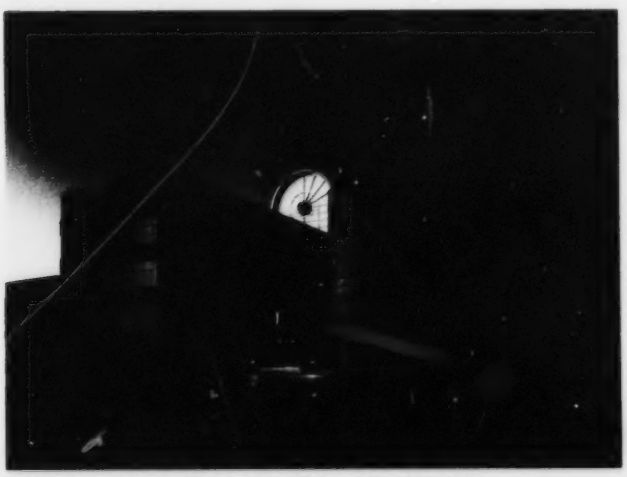
Description:
Ancast Industries Ltd. is a Canadian owned Ductile Iron Foundry producing ductile iron castings in grades 60-40-18, 65-45-12, 80-55-06 and 100-70-03. It services Agricultural Implement, Automotive, Railway, Defence and General Industrial Markets. The company operates on the philosophy of continuous improvement with a Quality Program utilizing statistical methods with emphasis on the Planned Prevention of Nonconformance and lot control.

Quality Standards:
AQAP-4, Ford Q1, Chrysler SQA, Rockwell SQA80, AQAP-6

Facilities:
Office and Foundry 80,000 sq. ft. on 5 1/2 acre site. Electric Induction Melting, Green Sand Moulding with Beardsley & Piper (20 x 16 x 6/6), Hunter (32 x 30 x 12/12) and Osborne (30 x 48 x 12/10) equipment. Shell and Air Set Core Equipment is utilized. Sand Laboratory, metallurgical Laboratory with Metallography and Spectro Chemical Analysis Equipment. Dimensional Tool Layout Laboratory and Pattern Shop are part of the facility.

Major Clients:
- Defence: Ingersoll Machine & Tool
- Agricultural: Ford New Holland, Flexi-Coil Ltd.
- Railway: CXT Limited, CNR, CPR
- Automotive: Rockwell Brake Div., Chrysler Corporation

Employees: 100



BIOQUEST INTERNATIONAL

#3 - 2725 Pembina Highway
Winnipeg, Manitoba
R3T 2H5
Ph: (204) 269-7264
Fax: (204) 269-6897

Contact:
Dr. Martin Samoiloff, Research Director

Description:
Environmental Biotechnology, specializing in biomonitoring. Bioquest performs standard mandated and innovative new bioassays of soils, waters and wastes. As well, Bioquest has been a leader in the development of biological methods for the evaluation of workplace and residential air quality, protocol development, and establishment of QA/QC procedures.

Featured Product:
Bioquest Air Sampler System, for objective evaluation of toxicological properties of indoor air

Featured Equipment & Facilities:
Holding facilities for bacteria, invertebrates and fish. Microtox facilities. Standardized and genetically-engineered stock species.

Major Clients:
North American Rockwell International, Alberta Energy Resources Board, Environment Canada, Illinois State Natural History Survey, National Research Council of Canada, Petro-Canada, Western Research, Enviro-Test Laboratories

Employees: 8

BOEING CANADA TECHNOLOGY LTD.

Winnipeg Division
99 Murray Park Rd.
Winnipeg, Manitoba
R3J 3M6
Ph: (204) 888-2300
Fax: (204) 888-2951

Contact:
Mr. J. Sawyer, President & Gen. Mgr.
Mr. M. Sloane, Director Marketing

Description:
Boeing's Winnipeg facility is dedicated to the design, development, fabrication and testing of advanced fibre- reinforced composite material components for a variety of aerospace applications. They also design and manufacture target systems. They have total engineering design capabilities (CAE and CAD) and experience in the design and manufacture of satellite and missile components. Aerospace sector involvement would include composites fabrication relative to satellite structures and antenna reflectors.

Quality Standards:
AQAP-1

Featured Equipment:
3 autoclaves (10' x 30' to 15' x 35') automated ultrasonic emmission inspection, NC Routers, NC Cloth cutting, NC Filament winders

Facilities:
510,000 sq. ft.

Major Clients:
Boeing Commercial Airplane Group, Department of National Defence

Employees: 1500

BRISTOL AEROSPACE

P.O. Box 874
Winnipeg, Manitoba
R3C 2S4
Ph: (204) 775-8331
Telex: 07-57774
Fax: (204) 885-3195

Contact:
Mr. Keith F. Burrows, Vice President & General Manager

Description:
Bristol Aerospace is a cornerstone on which the Aerospace Sector of Manitoba is built. Engineering, manufacturing and rocket propellant plants produce:

- Black Brant Sounding Rockets
- CRV-7 Rocket weapon systems
- Jet engine and Propulsion components
- Airframe components
- Helicopter wire strike protection systems
- Space science systems
- Aircraft repair and overhaul

In the area of Project Management, Bristol is the principal industrial support centre for the CF-5 and will upgrade and extend the life of the CF-5 Freedom Fighter into the 21st century. Total systems engineering provides support for a complete avionics- suite update and repair and overhaul, including:

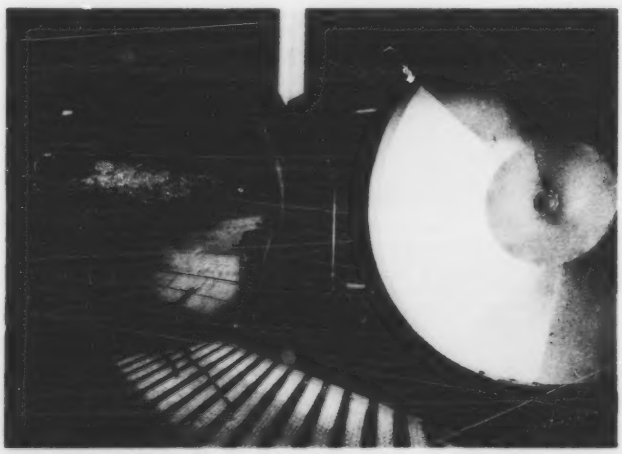
- Wings (ribs, spars and lower skin replacement)
- Dorsal Longeron replacement
- Vertical Stabilizer (improved design)
- Aft fuselage former replacement
- Flight control system upgrade
- Landing gear replacement
- Aircraft rewiring and repainting

Quality Standards::
AQAP-1, DND1015, MIL-Q-9858A

Facilities:
700,000 sq. ft.

Major Clients:
NASA, ESA, National Research Council, Department of National Defence, General Electric, Pratt & Whitney, Rolls-Royce, Boeing, Raytheon, The Air Forces of various countries

Employees: 1900



BOEING CANADA TECHNOLOGY LTD

C

CADORATH PLATING CO. LTD.

2150 Logan Avenue
Winnipeg, Manitoba
R2R 0J2

Ph: (204) 633-9420
Ph: 1-800-665-7449
Fax: (204) 632-7663

Contact:

Gerry O. Cadorath, V.P. Marketing
Kevin J. Matthews, Director of Engineering and Product Support

Description:

Cadorath Plating is a military approved special process facility servicing Aerospace and Defence.

Services include overhaul and partial overhaul of Turbine and Jet Engine Components. Hard Chrome Plating, Electroless and Sulphamate Nickel, Acid and Cyanide Copper, Silver and Cadmium Plating. Chromic Acid Anodizing, Sulphuric Acid Anodizing, Hard Anodizing, Chemical conversion of Aluminum, Ni-Cad Plating, Chemical conversion of Magnesium, Passivation of Stainless Steel, Non Destructive Test, Precision Grinding, Shotpeening, Milling, Machining, Thermal Spray, and Plasma Spray. All processes done in accordance with military specifications:

Featured Equipment:

- Salt spray cabinet test facility
- Lab Analysis Facility
- Electro Static Liquid Penetrant Inspection Line
- Heald 271 Tool Room Grinders
- Shotpeen Cabinet

Approvals:

- Department of National Defence
- Standard Aero
- Bristol Aerospace
- Canadian Helicopters
- Canadian Airlines
- Bell Helicopter Canada
- Pratt and Whitney Canada
- Keystone Helicopters
- Aviall

Facilities:

41.000 sq. ft.

Major Clients:

Aviall, Interturbine Dallas, Gas Turbine Services, Standard Aero, Bristol Aerospace, Canadian Helicopters, Columbia Helicopters, National Airmotive, Keystone Helicopters

Employees: 38

CANADIAN INSTITUTE OF INDUSTRIAL TECHNOLOGY

435 Ellice Avenue
Winnipeg, Manitoba
R3B 1Y6

Ph: (204) 983-6867
Fax: (204) 983-3154

Contact:

Mr. W.C. McGregor, Executive Director
Ms. Kathryn McGavin, Executive Manager
Mr. P.F. Kent, Marketing and Promotions Officer
Dr. M. Bakarat, Head, Robotics and Automation

Description:

The National Research Council's Canadian Institute of Industrial Technology (CIIT) is designed as a focal point for integrated research and development programs. CIIT provides a complete research environment for technical teams from Industry, University and Government. The institute fosters the formation of cooperative projects in areas such as computer integrated manufacturing sensor-based robotics, vision systems and artificial intelligence. Situated at CIIT are the NRC's Robotics and Automation Section (R&A). The R&A section will commit their resources to work together with partners on strategic research and development tasks defined by the private company. CIIT is open to any organization with a research project in the making. Commitments can range from basing an entire operation at the institute to posting a small technical group with a specific problem to solve.

Featured Equipment:

ASEA IRB6 Robot and Robotic Welding Cell; 3D Vision System; VAX 8530 and VAX 8250; Evans and Sutherland Graphic Workstation; McDonnell Douglas Unigraphics Workstation and Software; Symbolics 3650 Workstation; 5 and 3 Access CNC Machines; CNC Swing Turing Centre; Stereolithography Apparatus (SLA).

Facilities:

17,000 m^2 facility, including a 1,700 m^2 advanced manufacturing centre

Major Clients:

32 organizations from across Canada

BRISTOL AEROSPACE

CANADIAN TOOL & DIE LTD.

1331 Chevrier Blvd.
Winnipeg, Manitoba
R3T 1Y4
Ph: (204) 453-6833
Fax: (204) 453-3803

Contact:
Mr. J. Gatschuff, President
Mr. H.H. Roeder, Manager Specialty Engineering

Description:
Canadian Tool and Die has a strong reputation for quality in the manufacture of hydraulic cylinders, hubs, wheels, spindles and related components. For decades, it has been a supplier of component parts and assemblies to military subcontractors. Its highly qualified staff is versed in CAD and CAM systems work, and is interested in expanding production into space technology parts, custom machining and assemblies.

Quality Standards:
Q.C. Manual to C.S.A. Z299-2 and Department of National Defence DND1016

Facilities:
Large and small wheel manufacturing lines, press department, tool room, hydraulic cylinder test laboratory, cylinder assembly facility, Q.C. department, engineering department and warehouse. 66,680 sq. ft. building (53,744 sq. ft. production) 32,000 sq. ft. of compound area; machine shop, 8-CNC machines including 4 axis

Major Clients:
Ford New Holland, Thomas Equipment & John Deere

Employees: 150

CANMAG, CANADIAN ELECTROMAGNETICS LTD.

Bay 21, 1865 Sargent Avenue
Winnipeg, Manitoba
R3H 0E4
Ph: (204) 786-5515

Contact:
Mr. P. Klein, President

Description:
Canadian Electromagnetics Ltd. is a Winnipeg based affiliate of K & S Tool and Die Ltd. It was formed to provide a Canadian supplier to meet the International demand for focussing elements in the particle accelerator industry. Since its inception it has provided quadrupole and sextupole magnets to institutions in Canada and Europe. The ability of the Company to manufacture all the components of the finished product makes it unique in Canada.

Facilities:
8,250 sq. ft.

Major Clients:
University of British Columbia (TRIUMF accelerator), West Germany (HERA) and the University of Manitoba, Lawrence Berkeley Laboratory, University of California, Brookhaven National Laboratory, Associated Universities, Inc. Upton, L.I., N.Y.

Employees: 6

CHI SYSTEMS INC./CLINICOM INTERNATIONAL

208-93 Lombard Place
Winnipeg, Manitoba
R3B 3B1
Ph: (204) 942-5335
Fax: (204) 944-8110

Contact:
Mr. Roger Girard, Vice President

Description:
Chi Systems/CLINICOM International are active in information systems consulting, health care computing, system design and acquisition support, technology evaluation, strategic planning, and educational programs. They offer capabilities in research design/methodology, industrial and electronics database/information-communications, economic analysis, management, artificial intelligence, picture processing/image analysis. CLINICOM/Chi are interested in continued expansion in the health care and computing areas, as well as applications of expert systems to on-board diagnosis and management advice; telemetry of physiological data; medical ground support; astronaut health information systems; health status analysis and prediction.

Facilities:
Offices in Winnipeg, Toronto, Ann Arbor, Philadelphia and Chicago

Major Clients:
B.C. Children's Hospital, Province of Prince Edward Island, Mount Sinai Medical Center NY; Barnes Hospital Washington University, St. Louis, MO; Province of Manitoba; Canadian Healthcare Telematics, Inc.

Employees: 6 (Clinicom), 70 (Chi Systems)

CLASS SOFTWARE

39 Groveland Bay
Winnipeg, Manitoba
R3T 5B9
Ph: (204) 275-6621

Contact:
Ken Penner

Description:
Specializes in highly interactive instructional programming in various microcomputer environments.

Facilities:
Home office.

Major Clients:
Canadian School Districts — Direct & Site Licenses, Centre de Recherche Appliquée pour L'ordinateur (part-time)

Employees: 5

COMPOSITE TECHNOLOGY (CANADA) LTD.

69 Durand Road
Winnipeg, Manitoba
R2J 3T1

Ph: (204) 661-6412
Telex: 07-587511
Fax: (204) 661-9218

Contact:
Mr. P. Henderson, General Manager

Description:
Composite Technology is the authorized service centre for Bell, Aerospatiale, McDonnell Douglas and Schweizer Aircraft, and is involved in the overhaul and remanufacture of helicopter rotor blades. The company, a current holder of DSS contracts relating to helicopter blade service, is seeking to diversify into other aerospace activities and/or light manufacturing.

Quality Standards:
D.O.T. approved Inspection Organization No. 24-0002

Facilities:
20,000 sq. ft.

Major Clients:
Aerospatiale, Agusta, Bell, M.B.B., Sikorsky, MDHC (Hughes), Schweizer

Subsidiaries:
1. Composite Technology International PTE Ltd. (Singapore)
2. Composite Technics, Inc. (Dallas, Texas, USA)
3. Composite Technology, Inc. (Stockton, CA., USA)
4. Composite Technics (High Point, S.C., USA)

Employees: 15

CORMER GROUP INDUSTRIES INC.

551 Ferry Road
Winnipeg, Manitoba
R3H 0T5

Ph: (204) 783-2634
Fax: (204) 786-0980

Contact:
Ian Sutherland, Manufacturing Manager

Description:
Cormer Group Industries is a precision CNC machining facility, staffed with fully qualified experienced personnel. We are dedicated to providing quality products and service to all our clients.

Quality Standards:
Meets AQAP - 4 & CSA Z299.2 standards.

Featured Equipment
- 1 Horizontal CNC Machining Centre
- 2 Vertical CNC Machining Centres
- 3 CNC Lathes
- 1 Coordinate Measuring Machine
- General machine shop equipment
- Integrated CAD/CAM

Facilities:
15,000 sq. ft.

Employees: 25

CORTELCO CANADA INC.

870 Century Street
Winnipeg, Manitoba
R3H 0M5

Ph: (204) 786-5756
Fax: (204) 783-7353

Contact:
Mrs. M. Berg, Manufacturing Manager

Description:
Cortelco is the supplier of ITT Telephones and Equipment. Our Winnipeg facility manufactures telephone sets for the Canadian market place. Dedicated to Total Quality and customer service, we offer our customers the innovation technology to enable them to meet their needs for the future.

Facilities:
12,000 sq. ft. assembly plant

Major Clients:
MTS, Sask. Tel., Government of Canada

Employees: 32

CRYODYNAMICS MANITOBA INC.

211-435 Ellice Avenue
Winnipeg, Manitoba
R3M 3H8

Ph: (204) 942-5641
Fax: (204) 944-1812

Contact:
Mr. Richard P. Shand, Vice President

Description:
Cryodynamics Manitoba Inc. is developing commercial and transportation air conditioning systems based on Stirling Cycle, cryogenic engines. The systems use Helium, a totally inert and environmentally "friendly" gas, to provide cooling.

The company is a wholly owned subsidiary of Cryodynamics Inc., Mountainside, N.J. The technology is an adaptation of existing Cryodynamics microcoolers, manufactured for military and space applications.

Major Clients:
Motor Coach Industries

Employees: 3 (40 in head office)

CURLE GEOGRAPHIC SERVICES

3456 Grant Avenue
Winnipeg, Manitoba
R3R 3P6

Ph: (204) 896-1269

Contact:
Mr. Wayne Curle, President

Description:
Curle is a consultant offering non-photogrammetric mapping, aerial photographic interpretation and remote sensing application services. Curle specializes in hydrographic mapping using an interpretive contouring technique and Curle has over 10 years of directly related experience with the mapping of Prairie wetlands.

Major Clients:
Ducks Unlimited Canada; Royal LePage Real Estate; Andersen Management Ltd.

CUSTOM STEEL (MFG) LTD.

565 Marjorie Street
Winnipeg, Manitoba
R3H 0S8
Ph: (204) 783-2272
Fax: (204) 783-6588

Contact:
Craig D. Wallace, President

Description:
Custom Steel Manufacturing Ltd. (CSML) is a 100% Canadian-owned company based in Winnipeg, Manitoba. To meet customer high-tech sheet metal needs, emphasis has been directed in four major sectors: standard and specialized metal equipment racks, consoles and panels for the communications industry; metal enclosures for both electrical and electronic protection; CNC custom punching to service a wide variety of industrial customers and O.E.M.'s; stringent quality control procedures (including S.P.C.) to meet today's aerospace and computer component high level of quality standards. CSML has a recognized high quality paint department as well as full welding capabilities. CSML has full design capabilities with staff trained in their CAD/CAM system.

Quality Standards:
- AQAP-4
- MIL-I-45208A
- Full time SPC
- CSA Z299.2
- IS09002 (1991)

Featured Equipment:
- Promecam GH630Z Shear
- Promecam RG-103 110 Ton Brake
- Adira QH-3015 30 Ton Brake
- Rushworth 30/135 30 Ton Brake
- Strippit FC1000-III 33 Station CNC Punch Press
- Strippit FC1000-II 20 Station CNC Punch Press
- Three TIG/STICK welders
- One MIG Welder
- Three Spot Welders
- Full paint facilities incl: Two Bake Ovens, electrostatic paint line, closed forced air spray booth, aluminum etching, phosphate prime, approved storage facilities
- Brown Boggs 15LW 40 Ton Press
- 1 Circle Shear
- 1 Three-Foot Roller
- Time Saver Horizontal Sander

Facilities:
14,000 sq. ft.

Major Clients:
Unisys Canada Inc., Unisys Corporation, Texas, Transport Canada, Manitoba Hydro, Transalta Energy Systems, The Government of Canada, Atmospheric Environment, Canadian Broadcasting Corporation, Bristol Aerospace

Employees: 18

CYBERSHARE MANAGEMENT INC.

550 Berry Street
Winnipeg, Manitoba
R3H 0R9
Ph: (204) 775-0181
Fax: (204) 889-0311

Contact:
D. Turner, President

Description:
Cybershare, with interest in satellite transmissions, has extensive experience in database services, networking and communications. A highly-skilled technical staff continues work in educational software including CAL and CAI, commercial, engineering and on- line computing services, and professional software application development.

Featured Equipment:
Computers - Control Data Cyber 180/830
— IBM MS/DOS Micros

Employees: 55

DIMATEC INC.

180 Cree Crescent
Winnipeg, Manitoba
R3J 3W1
Ph: (204) 832-2828
Fax: (204) 832-4268

Contact:
Mr. Ivor Perry, Vice President Marketing
Mr. Bill Mackenzie, Sales Representative

Description:
Dimatec Inc. is an established company supplying precision custom machining services to the Aerospace, Diamond Drilling and other selected sectors. It specializes in CNC Equipment and is qualified in machining aerospace components. Dimatec Inc. offers a full range of machine shop equipment, e.g. machining centre and CADD capabilities.

Quality Standards:
Meets AQAP-4 Standards

Featured Equipment:
6 CNC 2 Axis Lathes, 1 3 Axis machining centre, CADD applicon — Schlumberger Sun 3/50 system, general machine shop equipment.

Facilities:
17,000 sq. ft.

Major Clients:
Bristol Aerospace, Midwest Drilling

Employees: 70

E.B. SYSTEMS LIMITED

313 Carpathia Road
Winnipeg, Manitoba
R3N 1T2

Ph: (204) 489-7467
Fax: (204) 489-7471

Contact:
Mr. W.E. (Bill) Evans, P.Eng., President
Mr. K.G. (Ken) Babb, P.Eng., Vice President

Description:
E.B. Systems Limited is a consulting, project management and systems engineering firm providing services to industrial and commercial clients nationally and internationally in the following areas of specialization:

- Local Area Networks (LAN), data wiring systems and Wide Area networks (WAN), using twisted pair, coaxial cable and fibre optics media for industrial and commercial application.
- "Business" Telecommunications — voice, data and video service provision, including customer-owned equipment (PABX, data terminals), as well as carrier and private networking alternatives (microwave radio, satellite).

Featured Equipment:
Full CAD facility for broadband network (CATV and LAN), HF, VHF and microwave propagation predictions and system design.

Clients:
Manitoba Government, Swedish Telecommunication Administration, AB Kinnevik (Sweden), Cork Communication Limited (Eire), TVS Venezuela, Simplot (Canada) Limited, TTT Trinidad & Tobago, Greenwich Communications PLC

ELECTROMAGNETIC SENSING AND INTERPRETATION

3 Aspenwood Place
Winnipeg, Manitoba
R2G 3Z9

Ph: (204) 663-6374
Fax: (204) 668-6339

Contact:
Mr. David Barber, Principal
Mr. Klaus Hochheim, Technical Director

Description:
EMSI is an environmental research company specializing in applied remote sensing. EMSI is involved in development and application of remote sensing techniques for water quality and sea ice investigations, the detection and enumeration of arctic marine mammals, and photogrammetric surveys for engineering and wildlife applications. EMSI has extensive experience in the acquisition and interpretation of airborne photographic and thermal imagery, and a broad background of experience using digital Landsat, NOAA, and Synthetic Aperture Radar (SAR) imagery. EMSI provides resource managers with cost effective quantitative resource information.

Head Office is located in Winnipeg; Branch Office is located in Waterloo, Ontario.

Major Clients:
Department of Fisheries and Oceans, Environment Canada, Energy Mines and Resources, Manitoba Natural Resources, Manitoba Remote Sensing Centre

Employees: 4

EM WAVE TECHNOLOGY LTD.

8 Miami Pl
Winnipeg, Manitoba
R3T 3T9

Ph: (204) 474-9603

Contact:
Mr. E. Bridges
Dr. L. Shafai

Description:
Em Wave has provided specialist design sutdies for an electromagnetic anechoic chamber facility for the Canadian Defence Research Establishment, Suffield, Albert. The firm has experience in antenna phased array studies, antenna feed design, and the development of a radar antenna for the Department of Fisheries and Oceans. Em Wave offers specialized R&D support for engineering projects using electromagnetic wave technology. Personnel have experience in antennas, radio and microwave frequency transmission circuits and systems, including the design, analysis, numerical modeling and optimization of systems. It also has experience in the development and management of testing procedures, and interpretation and reporting on test data for prototype components and systems.

Major Clients:
Bristol Aerospace, Defence Research Establishment, Suffield, Waterloo Research Institute, Danex Micro Inc., Department of Fisheries and Oceans

Employees: 2

EPT MANUFACTURING LTD.

1000 Powell Avenue
Winnipeg, Manitoba
R3H 0H6

Ph: (204) 632-0938
Fax: (204) 633-4314

Contact:
Mr. Ernie Enss, President

Description:
EPT Manufacturing Ltd. produces all types of Tooling up to 4,000 lbs. (Blanking and Forming Dies, Injection Molds, Forging Dies, Foundry Patterns, Shell Core Boxes, Machining and Assembly Fixtures) as well as Custom Machining and Fabricating.

Quality Standard:
As per Quality Control Manual

Featured Equipment:
3-axis TNC Machining Centre with on board Graphics Display (4th axis capability), complete machine shop with Universal Milling Machines, Lathes, Grinders, Drill Presses, Granite Plate Inspection Table, Hardness Tester.

Facilities:
6,000 sq. ft.

Major Clients:
Argus Industrial Supply Ltd., Boeing Canada Technology Ltd., Dominion Bridge Co. Ltd., John Buhler Inc., Motor Coach Industries Ltd., Westeel Agri Products Company.

Employees: 7

EXPORT PACKERS CO. LTD.

70 Irene Street
Winnipeg, Manitoba
R3T 4E1

Ph: (204) 477-1830
Telex: 07-58764
Fax: (204) 475-7740

Contact:
Mr. Ron Tucker, Director of Operations
Mr. L. Carvalho, Manager-Technical Services

Description:
Export Packers, one of few non-US processors to have USDA certification, is a major exporter of food products and pharmaceuticals, serving four continents. An innovator in biotechnology, Export Packers has one of the largest chemical and microbiological quality control laboratories in Canada. It has solid experience in research and development, including enzymatic and micro-protein research, and continues its investigations into new biotechnology products.

Featured Equipment:
Ultrafiltration Equipment, Electrophoretic, High Pressure Chromatography and Freeze Drying.

Facilities:
The ultra-modern Federally inspected egg processing facility in Winnipeg is one of only a handful of U.S.D.A. certified egg processing plants outside of the United States, and this certification attests to the high quality of products while allowing access to the world's largest single export market.

Major Clients:
The company's food processing, wholesaling, and biotechnology industries has established it as a major exporter of food products and pharmaceuticals to four continents.

Employees: 90

STANDARD AERO LTD.

FORT GARRY INDUSTRIES LTD.

460 McPhillips Street
Winnipeg, Manitoba
R2X 2G8

Ph: (204) 586-8261
Telex: 075-7594
Fax: (204) 956-1786

Contact:
Mr. R. Spitzke, President

Description:
Primarily involved in servicing the trucking industry, FGI has also been involved in aerospace, manufacturing forming bags used in packing insulation for Bristol Aerospace's Black Brant Rocket, the CRV7 rocket and the 17KS engine. Equipped with CAD and a full R&D staff complement, FGI has capabilities in breaking, punching, forming and welding of steel and aluminum, rubber and urethane coating, rubber molding and extrusion, and rubber to metal bonding. FGI is interested in ground support vehicles, vehicle equipment specialization, and specialized rubber base component applications.

Facilities:
24,000 sq. ft. Manufacturing
30,000 sq. ft. Warehouse

Major Clients:
Bristol Aerospace

Subsidiaries:
6

Employees: 160

FRANKLIN ENTERPRISES LTD.

43 Bunting Street
Winnipeg, Manitoba
R2X 2P5

Ph: (204) 633-9838
U.S. Watts: (204) 665-9838
Fax: (204) 633-4318

Contact:
Mr. Zoltan Gergely, Sr., President
Mr. Zoltan Gergely, Jr., Vice-President
Mr. John Gergely, Marketing Manager

Description:
Franklin Enterprises is a highly qualified engineering and design facility, with extensive experience as a sub-contractor to commercial and military interests within the aerospace sector. Franklin is committed to technological innovation in the machining, fabricating and tool and die industries, and is capable of working with such diverse materials as SPS 245, Inconel Alloy 903 and 718, Astroloy, Phenolic and Fibreglass/Kevlar.

Featured Equipment:
3 CNC Vertical Machining Centers with 4th Axis capability, 2 CNC Turning Centers with 3 Axis capability, 1 Mitsubishi Wire EDM with 4th Axis capability, and 1 ICAM Technologies CAD/CAM system.

Facilities:
20,000 sq. ft.

Major Clients:
Boeing Canada Ltd., Bristol Aerospace

Employees: 20

GEC PLESSEY TELECOMMUNICATIONS (CANADA) LTD.

419 Notre Dave Avenue
Winnipeg, Manitoba
R3B 1R3

Ph: (204) 942-7221
Telex: 07-57-588
Fax: (204) 943-6183

Contact:
Mr. G.D. Morton, President
Mr. I.A. Wright, Vice President, Operations

Description:
GPT (Canada) is involved in the manufacturing and marketing of advanced telecommunications equipment, including video-conferencing Codecs, digital Central Office switches, transportable satellite earth terminals, low power microwave distribution systems, 9-1-1 emergency reporting systems, and business telephone systems. The firm has full capabilities in PCB manufacturing and cable forming, as well as state-of-the-art design and development engineering facilities.

GPT (Canada's) European parents are leaders in electronics and telecommunications, experienced in fields such as the design and manufacture of military communications systems, radio systems, radar systems, meteorological systems, and aeronautical training and simulation systems.

Facilities:
- Manufacturing — 6,000 sq. ft.
- Engineering — 5,000 sq. ft.
- Marketing and Sales — 6,000 sq. ft.
- Administration — 2,000 sq. ft.

Major Clients:
Manitoba Hydro, Manitoba Telephone System, Telecom Canada members, GTE Corporation, International Microwave Distribution Systems Ltd., Teleglobe Canada.

Employees: 55

GLANTZ, LESTER M., P.ENG. CONSULTANT

512 Bower Blvd.
Winnipeg, Manitoba
R3P 0L8

Ph: (204) 889-2071

Contact:
Mr. Les Glantz, Consultant

Description:
Mr. L. Glantz is an aerospace business consultant providing services to both Canadian and International aerospace companies. Key functions include management consulting, technology assessment, technology transfer, research and development, marketing, new products search and acquisition.

Activities cover a broad range of categories, including instrumentation, communication and control, sensing and imaging, medical/dental, biotechnology, life sciences. These services are based on extensive management and engineering/scientific experience in aerospace, biomedical and complementary areas.

GUERTIN BROS. COATING & SEALANTS LTD.

50 Panet Road
Winnipeg, Manitoba
R2J 0R9

Ph: (204) 237-0241
Telex: 07-55172
Fax: (204) 233-5051

Contact:
Mr. Tony Guertin, President

Description:
Guertin Bros. Coating & Sealants Ltd. specializes in the manufacture of paint and related products, aerosol packaging, industrial coatings, adhesives, potting and casting compounds, caulks and tapes. They supply autoclaving caulks and tapes to the aerospace industry.

Facilities:
74,000 sq. ft.

Major Clients:
Boeing of Canada, Bristol Aerospace, Heath Techna, McDonald Douglas, Canadair.

Employees: 80

HELI-FAB LTD.

150 Cree Crescent
Winnipeg, Manitoba
R3J 3W1

Ph: (204) 958-6600
Fax: (204) 888-2912

Contact:
Mr. Raymond Haydaman, President

Description:
Heli-Fab is a specialized welding, sheet metal fabrication and heli-arc welding company serving the aerospace, transportation and communication sectors. Its product line ranges from assembly and sub-assembly fabrication and signal equipment manufacturing, to computer sub-detail manufacturing, and rehabilitation therapy equipment construction.

Quality Standards:
Heli-Fab's well-equipped Winnipeg plant offers quality control meeting AQAP-4 standards, and is staffed by qualified and certified personnel.

Featured Equipment:
Three Heli-Arc welders, five semi-automatic welders, one seam welder, one spot welder and sheet metal equipment, CAD/CAM system, 3 CNC punches, Press Brake & Shear.

Facilities:
3 plants: 15,000 sq. ft., 15,800 sq. ft. and 8,000 sq. ft.

Major Clients:
S.E.D. Systems, Raytheon, Bristol Aerospace, M.B.B. Helicopter, Boeing of Canada, Unisys Canada Inc., Otto Bock Orthopedics, Manitoba Hydro, CP Rail and CN Rail.

Employees: 84

HOMESTEAD COMPUTER SERVICES LTD.

1-1420 Clarence Avenue
Winnipeg, Manitoba
R3T 1T6

Ph: (204) 284-9830
Telex: 760-1141
Fax: (204) 453-2459

Contact:
Mr. Gary Craven, Director of Systems Development

Description:
Homestead is currently involved in the manufacturing of proprietary software and consulting services for the agricultural and financial sectors. Interested in expansion into the aerospace sector, Homestead has developed an Expert System for interpretation of LANDSAT images.

Major Clients:
Federal Land Banks in U.S.A., Sidney Future Exchange in Australia, Winnipeg Commodity Exchange, Department of Supply and Services

Subsidiaries:
Dealer network of 14 in Canada and 4 in United States.

Employees: 20

HUGHES AIRCRAFT OF CANADA LIMITED

260 Saulteaux Crescent
Winnipeg, Manitoba
R3J 3T2

Ph: (204) 949-2400
Fax: (204) 889-1268

Contact:
Mr. Ron Guimond, General Manager

Description:
Acoustic Technology Division, specializing in the development and manufacturing of Adaptive noise Cancellation Systems used to determine quality and operability of any type of rotating or reciprocating piece of equipment or machinery. In addition, R&D, as well as Engineering work is being done in the areas of Acoustics, Noise and Vibration.

Featured Product:
Noise Monitoring System (NMS), for determination of quality and operability of any type of rotating or reciprocating piece of equipment or machinery. Applications include end of production line test, continuous production machinery monitoring, as well as computer-aided noise source localization and measurement.

Major Clients:
General Motors Corporation

Facilities:
14,200 sq. ft.

Employees: 25

ICAM TECHNOLOGIES CORPORATION

329-435 Ellice Avenue
Winnipeg, Manitoba
R3B 1Y6

Ph: (204) 957-0737
Fax: (204) 697-8621

Contact:
L.E. Rehm

Description:
Since its inception in 1971, ICAM Technologies Corporation has become a leading developer and supplier of advanced manufacturing software solutions for North America's aerospace, defence and automotive industries.

Featured Equipment:
- APT Graphics Tutorial
- Five Axis Apt Processor with Sculptured Surfaces
- NC tool Path Verification Utility
- Expert System for Post-Processing
- Reverse/Conventional Tape Punch Processor
- Two Dimensional CAD System
- 2-1/2 D Integrated CAM System
- Flexible Automated Modeling and Scheduling System
- Custom Programming Services

Facilities:
Strategically located in the CIIT building, ICAM's modern facility is dedicated to training, research and development and marketing. These facilities are complemented by ICAM's head office located in eastern Canada, and sales office in Michigan.

Major Clients:
Aerospace, Automotive, Electronic and job shops in 22 countries.

INFOTECH MANITOBA

1970 Ness Avenue
Winnipeg, Manitoba
R3J 0Y9

Ph: (204) 945-5287
Fax: (204) 945-7592

Contact:
Ed Gonzalez/Rod Sprange

Description:
Industry development support to promote initiatives and partnerships with a mix of capabilities and resources to capitalize on unique opportunities in the market place. Companies wishing to explore opportunities in Manitoba are furnished with assessments of market trends, available product viabilities and capabilities, and Manitoba's overall capabilities in the field of information technology.

Employees: 9

INSTITUTE FOR TECHNOLOGICAL DEVELOPMENT

(See page 35 under University of Manitoba)

INVENTRONICS LIMITED

1420 Van Horne Avenue East
Brandon, Manitoba
R7A 6A4
Ph: (403) 461-5010
Fax: (403) 450-0234

Contact:
Mr. Gary Thompson, President

Description:
Inventronics, specializes in fabricating, painting and assembling sheet metal components and products. They have extensive experience in a full range of manufacturing processes including welding aluminum, some types of stainless steel, wet and powder painting, zinc plating, and chromate conversion coating. Products include components, cabinetry and chasis for telecommunications, electronic and electrical equipment, manufactured to MIL SPEC's. Areas of aerospace sector interest are primarly ground support systems.

Quality Standards:
- Quality program AQAP-4, AQAP-6, MIL-I-45208, MIL-I-45662
- Welding MIG and TIG to MIL-W-1595A
- Coating MIL-C-5541

Facilities:
177,000 sq. ft. (3 plants)

Major Clients:
Raytheon, Litton, Bell Helicopter and Pratt and Whitney, Transport Canada, Supply and Services Canada, 3M Company, Alberta Government Telephones, Saskatchewan Telephones and Saskatchewan Power, Westronics, Novatel, Northern Telecom, Unisys, and SED Systems

Employees: 275

INTEGRATED ENGINEERING SOFTWARE LTD.

347-435 Ellice Avenue
Winnipeg, Manitoba
R3B 1Y6
Ph: (204) 942-5636
Fax: (204) 944-5636

Contact:
Dr. Bulent Yildir, President

Description:
IES specializes in 2D/3D interactive Computer-Aided Engineering programs. ELECTRO, MAGNETO, COULOMB and AMPERES are powerful design tools with specific applicability to the aerospace industry.

MAGNETO is used for designing and analyzing electromagnetic devices and components such as solenoids, AC/DC motors, transformers, recording heads, magnets and charging fixtures. MAGNETO caters to linear, nonlinear, and permanent magnet materials. ELECTRO is used to design and analyze electrical and electronic equipment such as insulators, bushings, grounding electrodes, transmission lines, telecommunication cables and microstrip and integrated circuits. Both programs are fully integrated and include a geometric modeller, 2D and rotationally symmetric analysis and various output options. COULOMB is a 3D electric field solver. AMPERES is a 3D magnetic field solver.

Employees: 9

IRIS SYSTEMS INC.

123 Bannatyne Ave.
Winnipeg, Manitoba
R3B 0R3
Ph: (204) 947-9064
Fax: (204) 943-3803

Contact:
Mr. Michael Wiebe, Co-President

Description:
Iris Systems Inc. is a manufacturing/consulting firm specializing in the aerospace, utility, healthcare and telecommunications industries. Iris' skills focus on four major areas which include:
- business development (business plans, venture financing, market plans, etc.),
- technology development (contract R&D, technology sourcing and acquisition, etc.),
- prototype assembly and evaluation, and
- sourcing government funding to finance R&D and plant expansion (over $20,000,000 to date).

In particular Iris has an extensive capability in the area of developing very low cost RF data communication systems. This includes the ability to design, prototype, and fabricate in the VHF, UHF, C and Ku bands. The firm is also experienced in the implementation of spread spectrum modulation techniques suitable for unlicensed RF systems of up to 5 watts.

Major Clients:
Communications Canada, NRC, NASA, Canadian Electrical Ass'n, INCO, Government of Manitoba, Western Diversification Office and others.

Employees: 23

THE KAYLEY GROUP

Box 337 Station "A"
Winnipeg, Manitoba
R3K 2C2
Ph: (204) 896-0105
Fax: (204) 831-7960

Contact:
Douglas M. Finley, President
Alan McKay, Vice President

Description:
The aerospace arms of the Kayley Group offer:
- General consulting services on a broad range of subjects, including marketing, sales, operations, systems and financing;
- Information searches covering competitors, marketing data, contracting, material supply and other aspects of the industry;
- Direct sales representation with clients and potential clients on a world-wide basis; and
- Searches for manufacturing sources on behalf of Canadian, U.S., and international contractors.

The Kayley Group represents a number of small, but well equipped and approved, manufacturing companies. These companies have the ability to undertake:
Precision machining, custom machining, sheet metal fabrication, assembly, design and project engineering, materials development, advanced welding, special coatings and processes, heat treatment and brazing, turbine engine and acccessory repair and overhaul, and non-destructive testing.

KETAS CANADA INC.

P.O. Box 2550
Winnipeg, Manitoba
R3C 4B3 Ph: (204) 237-5840

Contact:
Mr. Ernst J. Klein, P.Eng., President
Mr. Traute Klein, B.A., B.Ed., M.A., Vice President

Description:
Applied Science Consultants in aerospace, energy, automation, custom microprocessor/computer, spatial and terrestrial telecommunication systems.

In addition, they provide statistical and financial analyses, systems management planning, project management, business and scientific translation services.

Employees: 2

KRAUS INDUSTRIES LTD.

P.O. Box 250
(Transcona Postal Stn) Ph: (204) 224-1616
Winnipeg, Manitoba Telex: 07-57829
R2C 1A8 Fax: (204) 222-0846

Contact:
Mr Dan McCaroll, Director of Operations

Description:
Kraus is experienced in the marketing of specialized electronic products, and wholly owns COMPUTRONICS INTERNATIONAL and COMMAND START. Kraus maintains a full R&D staff, designing, manufacturing and marketing electronics products, with a speciality in microprocessor-based equipment. Geared to small run and mass production, manufacturing a variety of self service consoles, motor fuel dispensing computers, including POS special products such as credit card validation. Kraus, with growing international markets, is looking for sub-contracts in areas such as work on printed circuit boards, and smaller assembly work in such areas as sheet metal and wire harnesses. Kraus also manufactures consumer electronics under sub-contract.

Quality Standards:
C.S.A. Z299.3

Facilities:
18,000 sq. ft.

Major Clients:
Texaco, Inter City Gas, Petro-Canada, Shell Oil, Canadian Tire Inc.

Subsidiaries:
2 (Toronto, Canada and Dallas, Texas)

Employees: 100

K & S TOOL AND DIE LTD.

Bay 21, 1865 Sargent Avenue
Winnipeg, Manitoba
R3H 0E4 Ph: (204) 786-5515

Contact:
Mr. Peter Klein, President
Mr. John Wilson, Quality Manager

Description:
K & S Tool and Die Ltd. is a privately owned Canadian company which was founded in 1975. The company specializes in precision work involving Progressive Dies, Compound Dies, Fine Blanking Dies, Jigs and Fixtures, Injection Molds, Vacuum and Blow Molds, Precision Machining, EDM, Designing and Engineering.

For over 10 years we have performed special project engineering workmanship which has included the design and manufacture of dedicated specialized machines for various industries.

The highly skilled staff consists of 14 tool and die makers. The company performs work for a wide range of industries including Aerospace, Electronics, Food and Agriculture.

Quality Standards:
AQAP-4 Standards (U.S. MIL-Q-9858A)

Featured Equipment:
Charmilles EDM machine, Deckel Copy Milling machine, lathes, milling machines, surface grinders

Facilities:
8,250 sq. ft.

Major Clients:
Bristol Aerospace, Boeing of Canada, Unisys Canada Inc., Northern Telecom Ltd., Otto Bock Othopedics of Canada, and Can Car Rail Inc.

Employees: 14

LINEAR SYSTEMS LTD.

1760 Sargent Avenue
Winnipeg, Manitoba
R3H 0C7
Ph: (204) 783-2228
Fax: (204) 783-0604

Contact:
Mr. Tom Thorsteinson, President

Description:
Linear Systems develops and manufactures O.E.M. computer boards. It specializes in commercial and industrial grade board level products which are compatible with Multibus and PC/AT computer systems. Linear has had it's standard products designed into systems and used by several major U.S. corporations and research institutions. Linear also manufactures a single board computer for embedded applications with small area network capabilities. In addition, Linear has designed turn-key computer based systems for use in the mining industry.

Facilities:
12 inch Wave Solder, PCad PCB design system, Logic analyser PAL programming, Intel 310 development system, PC/AT based microprocessor development systems

Major Clients:
Harris Corp., Bridge Communications, Proteon Inc., General Electric, IBM Corporation, Hughes Aircraft, Lawrence Berkely Laboratory

Employees: 10

OEDIPUS SYSTEMS — BRISTOL AEROSPACE

MACPLAN

Ste. 600, 5 Donald Street
Winnipeg, Manitoba
R3L 2T4
Ph: (204) 453-3103

Contact:
Mr. Roy Bukowski, Manager

Description:
MacPlan, specializing in environmental impact analyses, ecological monitoring, water quality studies, and remote sensing interpretation, has much experience in the routine use of satellite-derived digital data. The firm has served as technical advisor to a Program Advisory Board responsible for the design and management of a five year program, including remote sensing projects, of ecological monitoring of hydro development impacts on Northern Manitoba. It has provided environmental impact and remediation research for the Canadian Department of National Defence. MacPlan has interests in expanding the use of relevant satellite/airborne/shuttle derived data, focussing at present on ice-related applications. MacPlan is participating in a state-of-the-art evaluation of integrated microwave ("X," "C," "L" bands), TM, and SPOT data for modelling, monitoring, and management of ice dynamics in northern and central Manitoba, in association with the Canada Centre for Remote Sensing and the Manitoba Remote Sensing Centre.

MacPlan is a national firm comprised of 124 professional staff, and is part of the Canadian multinational Lavalin Group of companies.

It is recognized in EOSAT's inaugural "Directory of LANDSAT — Related Products and Services; International Edition — 1987." MacPlan is also listed in a compendium of national firms having recognized competence in the aerospace industry published by the newly created Federal Department of Industry, Science and Technology.

Facilities:
Local offices for staff of fifteen (including principal, senior and junior P.Eng.'s, MSc.'s, Ph.D., and M.E.Sc., a Mapper/Cartographer and a Dipl. Nat. Res. Mgmnt. Am M. Nat. Res. Mgmnt.); complete drafting equipment; modem link to national VAX system; access to AUTOCAD and various other computer-based technologies.

Major Clients:
Canadian Department of National Defence, Canada Department of Environment, Manitoba Hydro, Federal and Provincial Governments, ALCAN, ALCOA, Canadian Forestry Service, City of Winnipeg, REPAP Ferrostaal, REPAP Manitoba.

Employees: 15 locally (124 nationally)

MANITOBA REMOTE SENSING CENTRE

1007 Century Street
Winnipeg, Manitoba
R3H 0W4
Ph: (204) 945-6597

Contact:
Mr. Hartley Pokrant, Chief

Description:
The Manitoba Remote Sensing Centre is technologically equipped to map and monitor natural resources, and compile crop condition data in Canada and internationally. Centre personnel are experienced in the use of Image Analysis Systems for satellite data assessment, air photo interpretation, and are familiar with various airborne sensors. Staff have experience in using Landsat and NOAA data, and future plans include the use of systems such as RADARSAT and SPOT. The Centre is working to expand its work in remote sensing relative to agricultural data, natural resource mapping and environmental monitoring.

Will participate on a joint venture basis with companies engaged in remote sensing activities.

Major Clients:
Canada Centre for Remote Sensing; Statistics Canada; Canadian Forestry Service, Canadian Wheat Board, Canada Agriculture, Department of Fisheries & Oceans, Department of Natural Resources, Manitoba, Manitoba Department of Agriculture, Manitoba Hydro, Saskatchewan Research Council, Department of Natural Resources, North West Territories

Employees: 6

MANITOBA RESEARCH COUNCIL

1329 Niakwa Road East
Winnipeg, Manitoba
R3J 3T4
Ph: (204) 945-8744
Toll Free: 1-800-782-0729
Fax: (204) 945-1784

Contact:
Dr. E. Nyborg, President

Description:
The Manitoba Research Council (MRC) is an established industry oriented science and technology agency of the Province of Manitoba, which plays a lead role in encouraging and facilitating applied scientific research and technological development in Manitoba.

Through its operating units and strategic alliances with other organizations, MRC provides contract services and assists industry to acquire and use technology, and develop innovative products and systems. MRC provides food technology services from its facilities in Portage la Prairie and engineering and environmental technology services from its Winnipeg facilities. MRC has cooperative initiatives with the University of Manitoba and the National Research Council of Canada.

MRC is accredited by the Standards Council of Canada for specific tests registerd by the Council.

MRC's complement of services and capabilities include the following:

Engineering Services:
- Electronic Design
- Equipment Retrofit
- Finite Element Analysis
- Integrated Circuit Design
- Machine Design
- Materials Engineering
- Mechanical Design
- Noise & Vibration Analysis
- Physical Testing
- Printed Circuit Board Layout
- Prototyping
- Software Development
- Surface Mount Technology

Technical Information & Advisory Services:
- Computer Data Searching
- Information Sourcing
- Interlibrary Loans
- Literature Searches
- Technical Evaluations

Environmental Monitoring and Analytical Chemistry Services:
- Air Quality Monitoring
- Environmental Chemistry
- Hazardous Waste Analysis
- Leachate Testing
- PCB Analysis
- Trace Metals & Organics
- Transformer Gas Analysis

Food Technology Services:
- Product Feasibility Studies
- Ingredient Sourcing & Evaluation
- Recipe Development
- Color, Viscosity & Texture Testing
- Quality Assurance Programs
- Plant Sanitation Audits
- Shelf-Life Studies
- Regulatory Compliance Assistance
- Product Formulation
- Consumer Preference Studies
- Process Development
- Test Market Production
- Nutrition Labelling Assistance
- Pesticide Residue Detection
- Chemical and Micro-biological Assessments

Cooperative Initiatives:
With University of Manitoba:
- Advanced Industrial Materials Program
- Agri-Food Biotechnology Program

National Research Council of Canada:
- Industrial Research Assistance Program
- Research Institute Support Program

MANITOBA TELEPHONE SYSTEM

Fundamental Planning
— B402
489 Empress Street
P.O. Box 6666
Winnipeg, Manitoba
R3C 3V6

Ph: (204) 941-8492
Fax: (204) 774-9441

Contact:
Ron Porath, Fundamental Planning Mgr.

Description:
MTS, a member of Telecom Canada, has extensive experience in earth station and satellite supported telecommunication services. It is a participant in the opportunity assessment of Mobile Satellite (MSAT) remote area services, and serves as advisor to DOC in the review of MSAT & other radio spectrum issues.

MANITOBA REMOTE SENSING CENTRE

MIDWEST DETROIT DIESEL-ALLISON LTD.

1460 Waverley Street
Winnipeg, Manitoba
R3T 0P6

Ph: (204) 452-8244
Telex: 07-57726
TWX: 610-671-3579
Fax: (204) 452-2153

Contact:
Mr. B.D. Norrie, General Manager

Description:
A division of Midwest Detroit Diesel-Allison Ltd., Midwest produces packaged power systems utilizing General Motors "Detroit Diesel" or "Electro-Motive" diesel engines, as well as "Perkings" and "Isuzu Diesel" engines. With worldwide market penetration, CSA approved products, and a QC program and QA manual in place, Midwest Power is providing quality service to the hydro electric, petroleum, mining and service sectors.

Quality Standards:
Have QA manual and QC program. Are an approved DSS bidder

Specialized Equipment:
Vibration diagnostic equipment, Electric load banks capacity to 3500 KW

Facilities:
37,000 sq. ft.

Major Clients:
Northwest Territories Power Corporation, Shell Canada Resources, B.C. Hydro, Gulf Canada Resources, Imperial Oil Services, Quebec Iron and Titanium, Bank of Montreal, Dome Petroleum, Manitoba Hydro, Saskatchewan Power Corporation, Echo Bary Mines Ltd., and North West Gold Corp.

Subsidiaries:
4

Employees: 65

MIND COMPUTER PRODUCTS

892 Portage Avenue
Winnipeg, Manitoba
R3G 0P4

Ph: (204) 786-7747
Fax: (204) 786-1323

Contact:
Brad Fry, President

Description:
Mind Computer Products, a division of Myriad Innovative Designs Inc., is a leader in Manitoba's micro computer industry. The engineers at Mind boast the creation of the entirely unique Mind 286i Industrial Personal Computer, specifically designed for use on any industrial/manufacturing shop floor. Water proof, dust proof, and chemical resistant to name a few, the Mind 286i is designed to connect shop floor computers with a company's internal networking system, while being subject to the harshest of industrial environments.

As one of Manitoba's truly unique and innovative companies, Mind Computer Products excels in providing real time process control systems and software solutions in a wide variety of industrial, business and personal environments.

The focus at Mind, as we progress into the 1990's, is to provide solutions for the information age. This entails aggressive marketing strategies, superior product quality, and dedication to customer satisfaction and support.

Quality Standards:
CSA approved, 72 hour burn-in time

Facilities:
6,800 sq. ft.

Employees: 45

MONAC INTERNATIONAL CORPORATION

435 Ellice Avenue
Winnipeg, Manitoba
R3B 1Y6

Ph: (204) 943-6797
Fax: (204) 949-9021

Contact:
Dr. M. Nabil Bassim, Executive Vice President
Mr. Rasheek Rifaat, V.P. Engineering

Description:
MONAC International Corporation specializes in development of computer equipped, software controlled systems for continuous monitoring and surveillance of large structures. It detects the level of acoustic emission and relates it to the extent of damage. Applications of the technology include aircraft and aircraft engines, bridges, pressure vessels, turbines etc.

Facilities:
3,000 sq. ft. of R&D and pre-manufacturing space

Major Clients:
Department of National Defence, CN Rail, Burlington Northern Railroad, Manitoba Hydro

Employees: 15

NATIONAL COATING TECHNOLOGIES INC.

1975 Logan Avenue
Winnipeg, Manitoba
R2R 0H8

Ph: (204) 632-5585
Fax: (204) 694-3282

Contact:
Mr. John Read, Vice President and General Manager
Mr. Renny Kaptein, Production Supervisor

Description:
National Coating Technologies specializes in thermal spraying of metallic and ceramic coatings on metal parts for the aerospace, paper, mining and other industries.

Quality Standards:
QC program and manual. DSS approved bidder.

Featured Equipment:
Several completely equipped areas for plasma and flame spraying. Well equipped machine shop including 55 ft. long, 66 inch diameter lathe. Complete blasting facility.

Facilities:
18,000 sq. ft.

Employees: 14

NORTHERN AERO INDUSTRIES LIMITED

114 McLaughlin Avenue
Winnipeg, Manitoba
R3J 2S5

Ph: (204) 837-8002
Cable: NORAIR
Fax: (204) 831-7194

Contact:
W.G. Peters — President, General Manager
A. Higham — Treasurer/V.P.

Quality Standards:
A.G. Higam — Chief Inspector

Description:
Designer and Manufacturer of Cyclic De-Icing Sequence Timers: engine accessories to Rolls-Royce Dart Engine Systems, incorporated on FH227 Fairchild Hiller, F-27 Fokker, Herald, Gulfstream, Viscount aircraft; PROP & COWL De-icing timers for the Hawker-Siddely 748 aircraft; overhaul/repair of aircraft relays.

Our product is incorporated as standard equipment on more than one hundred international and domestic airlines and is exported to over fifty countries.

Facilities:
Manufacturing plant and office in Winnipeg

Subsidiaries:
Allied International Corporation,
5 Dakota Drive
Lake Success, New York 11042-1109
Contact: Mr. G. Sanky — Vice President
Cable: "Alidinter" New York
Telephone: (516) 326-2244
Fax: (516) 326-2650
RCA Telex: 224022
WU Telex: 96-8453
MCI Int. Telex: 6852409

Employees: 12

PRAIRIE AGRI PHOTO LTD.

292 Main Street
P.O. Box 817
Carman, Manitoba
R0G 0J0 Ph: (204) 745-2009

Contact:
Mr. Jack McKinnon, President/Director

Description:
Prairie Agri Photo specializes in aerial infrared photography for vegetation monitoring and environmental assessment. This product is used by crop producers throughout the prairie provinces as well as by citrus producers in Florida. A new division called Resource Monitoring 2000 is actively engaged in transferring this technology to Zimbabwe and other overseas countries.

Featured Equipment:
A Cessna 172 and Piper Cammanche 250 aircrafts, four Hasselblad 70 mm IR camera systems and three 6x7 Pentax camera systems.

Subsidiaries:
Joint venture in Harare, Zimbabwe

Employees: 8

PRECISION METALCRAFT INC.

72 Park Lane Avenue
Winnipeg, Manitoba Ph: (204) 694-7200
R2R 0K2 Fax: (204) 694-5123

Contact:
Matt Kaufmann — Vice President

Description:
Precision CNC fabrication of sheet and aluminum parts. Suppliers of electro-mechanical components OEMS. Boxes, cabinets, racks, brackets. Complete in house finishing line.

High Quality and On-time Delivery, utilizing the most advanced CNC fabricating equipment, we can shear, punch, form, weld and paint to your specifications. Our fabricating expertise is complimented by a complete CAD/CAM and quality assurance system based on AQAP 4.

Quality Standards:
AQAP 4

Featured Equipment:
DNC Shearing Centre, Automated Paint Pretreatment Line

Facilities:
13,000 sq. ft.

Major Clients:
Major electronic assembly plants (Unisys Canada Inc., Northern Telecom, CAE Electronics Montreal, Unisys Defence Systems), Major medical equipment manufacturers, government agencies, Aerospace, Telephones and Hydro.

Employees: 25 Production: 20

PULSE ENGINEERING LTD.

300 Keewatin Street
Winnipeg, Manitoba
R2V 2R9 Ph: (204) 633-4321

Contact:
Ken Procak, General Manager

Description:
Pulse Engineering Ltd., with fully-equipped repair and testing facilities, functions as DND-approved Standards Laboratory, a certified calibration lab, and specializes in electronic instrument repair, including speed meter sales and service. Additional capabilities include CAD, board design, electronic and electro-mechanical engineering services, design and manufacture of electronic control systems and instrumentation, including applications of digital signal processing.

Quality Standards:
Department of National Defense approved Standards Laboratory (AQAP 6)

Featured Equipment:
Certified calibration lab.

Facilities:
Repair and test lab facilities, CAD work-stations, manufacturing area.

Major Clients:
Boeing Canada Technology Ltd., Carte International Ltd., CN Rail, CP Rail, Federal Pioneer Limited, Unisys, Westinghouse Canada Inc., RCMP

Employees: 10

QUANTIC LABORATORIES INC.

Suite 200
281 McDermot Avenue
Winnipeg, Manitoba
R3B 0S9

Ph: (204) 943-2552
Toll Free 1-800-665-0235
Fax: (204) 957-1158

Contact:
Dr. A. Wexler, President
Mr. Curtis Rebizant, Product Marketing Manager

Description:
Quantic Laboratories Inc. is a software development firm interested in our application to electronics opportunities in the Aerospace industry. It has developed and markets an electronic CAE/CAD software program known as GREENFIELD™ which simulates transmission line characteristics such as cross-talk, ringing, time delay, etc. The simulation tool reduces wasteful prototyping and production delays.

Facilities:
5,000 sq. ft.

Major Clients:
Several of the leading companies in the electronics industry in North America and Europe.

Employees: 23

RED RIVER COMMUNITY COLLEGE

2055 Notre Dave Avenue
Winnipeg, Manitoba
R3H 0J9

Ph: (204) 632-2291

Contact:
Dean of Technology

Description:
RRCC is a comprehensive technical institute, with electronic laboratories, machine shops, a fully equipped manufacturing centre, and a CAD/CAM centre, with intergraph. RRCC offers extensive training opportunities in computer technologies, metallurgy, and the aerospace sector. It is fully capable of assuming prototype design work and customized training programs.

Featured Equipment:
Advanced Technology Centre, CAD/CAM (Intergraph), electronics labs.

Facilities:
College serving 25,000 students

Major Clients:
City of Winnipeg, Several diverse industries

Employees: 750

S.D.S. TECHNICAL DEVICES LTD.

P.O. Box 1998
Winnipeg, Manitoba
R3C 3R3

Ph: (204) 589-7507
Fax: (204) 582-5964

Contact:
Mr. R. Tayler, President
Mr. R. Kliske, Technical Services Manager

Description:
Established in 1971. S.D.S. Technical Devices Ltd. has extensive experience in the alarm and industrial control field. Services and products include:

- Telephone circuit boards for MTS
- CCTV systems for museums, hotels and industry
- Environmental control and monitoring systems
- Access control systems
- Design and manufacture of industrial contol systems
- All types of intrusion, fire, temperature, medical, alarm systems
- Medical Alert System

Facilities:
1,800 sq. ft. office, shop and assembly facilities, 7 installer technicians

Employees: 10

SHL SYSTEMHOUSE INC.

1150-330 St. Mary Avenue
Winnipeg, Manitoba
R3C 3Z5

Ph: (204) 944-9166

Contact:
Mr. Tom Hiebert

Description:
System integration, which is the supply of total information processing solutions by creating a combination of professional services, expertise and products from multiple vendors geared toward the unique requirements of the client.

Major Clients:
Bristol Aerospace, Standard Aero, Intercity Gas, Provincial Government, Great-West Life, Richardson Greenshields

Employees: 42 (1,700 in North America)

SOTA ELECTRONICS CORPORATION

12-1325 Markhan Rd
Winnipeg, Manitoba
R3T 4J6 Ph: (204) 261-3871

Contact:
Mr. Ken Maicher, Vice President

Description:
SOTA Electronics specializes in the manufacture of electronic components and subassemblies. SOTA has recently developed the capability of manufacturing MIL-spec transformers through an association with Magnetika, Inc. based in Los Angeles, California. This association with Magnetika has also provided SOTA with access to the design, development and manufacture of uninterruptable power supplies.

Facilities:
2,500 sq. ft.

Major Clients:
Magnetika (Subcontract work for Ratheon, RCA, Litton Guidance Systems, Hughes, McDonald Douglas)

Employees: 9

SOUTHPORT AEROSPACE CENTRE INC.

Headquarters Building
P.O. Box 233 Ph: (204) 428-3370
Southport, Manitoba Ph: (204) 428-3371
R0H 1N0 Fax: (204) 428-3377

Contact:
Douglas E. Thomson, President and Chief Executive Officer

Description:
Southport Aerospace Centre is seeking to retain and build upon Canadian Forces Base Portage's traditional role as a pilot training centre following the privatization of military flight training in August, 1992. Due to its clear uncluttered skies and flat geography, Portage is ideally suited to develop into a world class flight training centre.

The potential for development of this site as a totally integrated facility to include training and operations in the areas of maintenance, air traffic control, flight instruction as well as avionics research and development is unbounded.

The "Centre of Opportunity" is not limited to the aerospace industry but is readily adaptable to a host of potential industrial technological and educational applications.

Facilities:
- almost 1,200 acres (480 hectares)
- 197 QUALITY RATED BUILDINGS including 5 large hangars, large modern equipment shed, administrative centre, maintenance and warehouse structures as well as dining and club facilities.
- 100 private residential units plus 11 dormitories
- a modern recreational complex which includes an indoor swimming pool, multi-purpose area, bowling lanes and a theatre centre
- 4 asphalt runways
- a modern and extremely well-maintained infrastructure

SOUTH WINNIPEG TECHNICAL CENTRE

130 Henlow Street
Winnipeg, Manitoba Ph: (204) 488-2451

Contact:
Mr. Guy Hamel, Manager, Industry Training

Description:
South Winnipeg Technical Centre offers training and education in various industrial and business disciplines, including CAD, CAM, CNC manufacturing, automated systems, robotics, and electronics. SWTC staff include professional engineers, technologists, technicians, and journeymen. The Centre is in consultation with the aerospace sector, in the continued development of customized courses leading to improved efficiencies and skills of sectoral workers.

Employees: 50

SOUTHPORT AEROSPACE CENTRE INC.

SPECTRUM MANUFACTURING CO. LTD.

Subsidiary of Kraus
Industries Ltd.
495 Madison Street
Winnipeg, Manitoba
R3J 1J2

Ph: (204) 885-5928
Fax: (204) 831-0973

Contact:
Hans Kraus, President
Carlos Abrego, V.P. Operations
Frank Bilton, Sales Manager

Description:
Spectrum has extensive experience in manufacturing metal products for the electronics, telecommunication and computer industries. Spectrum is well diversified, with involvement in aerospace hardware for computer installations, paint finishing, prototype sheet metal CNC machining, and general metal Fabrication. CAD CAM System.

Quality Standards:
Department of National Defence DND 1016
QMI - CAN3 - Z229.4

Facilities:
11,500 sq. ft.

Employees: 25

SPIECE ASSOCIATES INC.

59 Shearwater Bay
Winnipeg, Manitoba
R3T 4V8

Ph: (204) 261-7452

Contact:
Mr. E.L. (Gene) Spiece, President

Description:
Spiece Associates Inc. provides task-oriented management, consulting, strategic planning, marketing and electronic information retrieval services. It specializes in the aerospace and other advanced technology industrial sectors. Spiece Associates Inc.'s clients includes both private and public organizations in Canada, United States and Europe.

Employees: 2

STANDARD AERO LIMITED

33 Allen Dyne Road
Winnipeg, Manitoba
R3H 1A1

Ph: (204) 775-9711
Telex: 07-57878
Fax: (204) 885-2229

Contact:
Mr. R.A. (Art) Carter, Vice President Marketing

Description:
Standard Aero is Canada's largest independent aircraft gas turbine engine, engine accessory and airframe accessory repair and overhaul specialist. For over 52 years Standard Aero has been supplying high quality repair and overhaul services as well as piece part supply to military and civilian customers in over 80 different countries in all areas of the world.

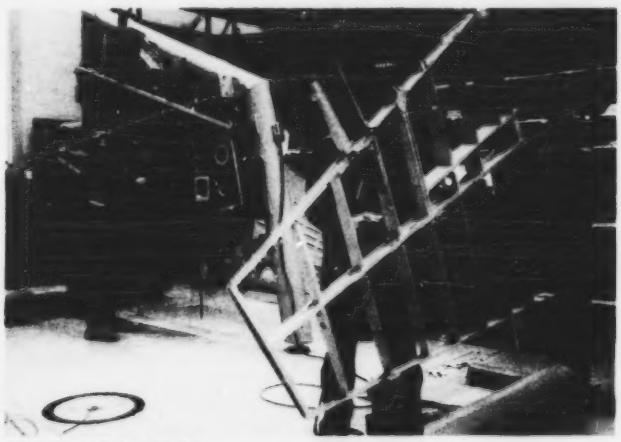
Headquartered in Winnipeg, Standard Aero's worldwide service is supported by a network of 7 Regional support centres across N. America and Europe.

Product Specialization:
- Allison A250/T63 Series: All Models Repair & Overhaul, Unit Exchange, Rental Engines, Module repair and overhaul, Piece Part repair and New Parts supply
- Allison A501/T56 Series: All Models (including industrial) Repair and Overhaul and Parts supply
- Pratt & Whitney PT-6 A Series: All Models Repair and Overhaul, Unit Exchanges, Rental Engines.
- Lycoming T53/T55 Series: All Models Repair and Overhaul and Piece Part supply
- General Electric T58/CT58 Series: All Models Repair and Overhaul
- Sunstrand Turbomach APU: Models Repair and Overhaul

Quality Standards:
Transport Canada Approval # 22-58
DND DGQA approval to AQAP-1 (equiv. MIL-Q 9858)

Facilities:
3 plants in Winnipeg (270,000 sq. ft.) + 2 Engine Test Cells
Regional Support Centres in Montreal Quebec, Vancouver B.C., Charlotte N.C., Dallas Tx., Van Nuys Ca., Redmond Wa. & London Eng.

Employees: Total all locations — 750



BRISTOL AEROSPACE

STANDARD MACHINE WORKS LTD.

660 St. Matthews Avenue
Winnipeg, Manitoba
R3G 0G8
Ph: (204) 783-7001

Contact:
Mr. Norm Bickell, President

Description:
Standard Machine Works is universal in its industrial scope, providing a complete range of machining, manufacturing, tooling and welding services, including custom engine rebuilds. Standard machine has experience in the provision of precision tooling for the aerospace sector. Its fully qualified machinists and mechanics have extensive experience in industrial, marine, and military applications of machine services.

Featured Equipment:
T.I.G. and M.I.G Welding Equipment and full line of machine tools with digital readout — imperial — metric systems

Facilities:
13,000 sq. ft.

Major Clients:
Winpak, Motor Coach Industries, Powell Equipment, Standard Aero, Boeing, Bristol Aerospace, Tupperware, Canadian Pacific Railways and Manitoba Hydro, Winnipeg Transit, I.C.G.

Employees: 24 minimum

TARRY & ASSOCIATES LTD.

1209-600 Setter Street
Winnipeg, Manitoba
R2Y 2H7
Ph: (204) 889-0346

Contact:
Mr. R.J. Tarry, P.Eng., CMC

Description:
Tarry & Associates Ltd. is a general management consulting firm specializing in the areas of marketing, business planning, feasibility studies and government program liaison. A variety of assignments have been carried out for both large and small sized Canadian aerospace firms and for government departments and industry associations concerned with development of Canada's aerosapce industry.

TECHNICAL PRODUCTS INTERNATIONAL LTD.

90 Durand Road
Winnipeg, Manitoba
R2J 3T2
Ph: (204) 669-6690
Fax: (204) 661-8657

Contact:
Mr. F. Wellink, President

Description:
TPI is currently involved in the manufacturing of electronic cable assemblies, featuring injection molded ends. In addition to this manufacturing capability, TPI utilizes a fully equipped machine shop for the fabrication of conventional and epoxy-resin mold tooling for prototype and short-run injection molds.

Working within MIL SPECS, TPI has specialized mold fabrication capabilities, and is in the active pursuit of contract work involving the development and/or manufacture of components for computer, telecommunication, and instrumentation applications.

Quality Standards:
MIL-I-45208A
CSA approved shop (File no. LR67481)

Featured Equipment:
- 20 to 80 ton vertical injection molding machines c/w auxiliary driers and mold temp. controllers.
- pneumatic driven crimping presses
- automated wire stripper
- automated wire stripper/cutter
- automated wire cutter
- EDM c/w 3-dimensional orbiting head
- 3-dimensional milling machine
- Lathe
- Surface Grinder

Facilities:
12,000 sq. ft.

Employees: 20

STANDARD AERO LTD.

TECHNICAL RESEARCH INVESTIGATIONS & DEVELOPMENT (TRIAD) LTD.

787 Haney Street
Winnipeg, Manitoba
R3R 0Y7

Ph: (204) 885-6099
Fax: (204) 885-6099

Contact:
Dr. E. Thompson, President

Description:
TRIAD Ltd. is an R&D oriented consulting firm, specializing in materials and chemistry.

Employees: 2

U

UMA ENGINEERING LTD.

1479 Buffalo Place
Winnipeg, Manitoba
R3T 1L7

Ph: (204) 284-0580
Fax: (204) 475-3646

Contact:
Mr. Rober Petri
Mr. Carl Anderson

Description:
UMA Engineering Ltd. is the principal company of the UMA Group offering expert and diverse engineering capabilities ranging from structural, mechanical, electrical, instrumentation, agri-industrial, construction management, engineering surveying, environmental, civil, transportation, planning, landscape architecture, geotechnical, geological, hydrogeological and remote sensing.

Within the aerospace sector, UMA is active and interested in industrial plant design, construction management, remote sensing and satellite imagery analyses and other work related to engineering and environmental applications.

1) UMA Engineering Ltd. has a Computer Aided Design and Drafting System in our Winnipeg Office. The system, for engineering design and drafting, is on a component basis and can be utilized as a stand alone unit or integrated into a complete CAD system. The design work stations consist of IBM Compatible 386's with a 40 Mb hard drive, dual monitors, and a Calcomp 17" x 24" digitizer. The Autocad work stations are IBM AT's with a colour monitor, 20Mb hard drive, and a small digitizer tablet. Drawings are produced on a Calcomp 1043 plotter that can handle sheets up to a standard AO size.
2) Complete photogrammetric mapping services are offered through Western Photogrammetry, a division of UMA Engineering Ltd. Equipment currently consists of a Wild BC1 Analytical Stereoplotting System Controlled by a Nova 4X Mini-Computer; a Wild A10 Semi-Analytical Stereoplotting Instrument; a Zeiss Jena Stereometrograph — 1st order plotter; a Wild B85 Stereoplotting Instrument; and the PATM-43 Block Adjustment program for aerial triangulation.

Facilities:
38,000 sq. ft. in Winnipeg

Major Clients:
Industry and Government in all sectors.

Subsidiaries:
10

Employees: 1,200 (150 in Winnipeg)

UNIES LTD.

1666 Dublin Avenue
Winnipeg, Manitoba
R3H 0H1 Ph: (204) 633-6363

Contact:
Mr. Gordon Spafford

Description:
UNIES Ltd., consulting engineers, specialize in remote sensing interpretation, energy systems and analysis, water management, hydraulics and hydrology. Current facilities, which include air quality monitoring equipment and hydraulic equipment, are supportive of company efforts to increase involvement in energy control and supply, and remote sensing work.

Facilities:
4,000 sq. ft.

Major Clients:
Manitoba Government, Canadian government, construction industry, legal

Employees: 7

UNISYS CANADA INC.

Defence Systems
200 Saulteaux Crescent
Winnipeg, Manitoba Ph: (204) 888-4222
R3J 3W3 Fax: (204) 885-4334

Contact:
Mr. Albert Cerqueira, Director of Business Development

Description:
Unisys offers customers a full range of engineering and manufacturing capabilities, with precision equipment capable of handling all aspects of MIL-SPEC assembly, including quality assurance, environmental stress screening, test engineering, production engineering, production/material/procurement control, configuration/data management, prototype assembly capabilities, sub-assembly test, final test and subsystem integration.

Today Unisys is the supplier of standard computer and MIL-SPEC LAN hardware for the Canadian navy and has established a strong position as a military memory systems producer for both the Canadian and U.S. Navies.

Specific capability in: advanced computer architecture, distributed processing systems including LAN's, non-volatile memory technology, high density and high reliability MIL-SPEC power supplies, MIL-SPEC packaging and multi-layer printed circuit board design are well developed and steeped in the MIL-SPEC process at the Unisys Winnipeg operation.

Quality Standards:
AQAP-1, AQAP-4, AQAP-13, MIL-Q-9858A, MIL-1-45208A and MIL-STD-45662

Manufacturing/Equipment Facilities:
- Assembly operation with automated process control and full Electro-Static Discharge (ESD) controls.
- Environmental coating capability for Humiseal and RTV
- Strict quality assurance in accordance with AQAP-1
- Government certified assemblers/operators
- Standards and calibration control lab
- Raised ESD flooring for test and integration areas
- Full environmental stress screening capability
- Thermal shock chambers: -73° C to +175° C at 10° C/minute
- Thermal burn-in: ambient control at 50° C.
- Random vibration: 5 to 200 Hz at 26 G's.
- Small machine shop for rapid prototype and factory support.

Engineering/Equipment Facilities:
- Controlled access lab/development area
- mainframe design development tools
- Apollo-based engineering work stations
- ASIC design capabilities tools
- Full automated test equipment support capability
- Ada software development environment
- CMS-2 software development environment
- Various support languages (Fortran, C, APL, PL/1, etc.).
- VME and 680XO development environment
- PC work station support tools
- Full management/development control procedures and tools
- Software quality assurance in accordance with AQAP-13 and development per MIL-STD-2167.

Facilities:
79,430 sq. ft.

Major Clients:
Lockheed Corporation U.S. Navy, Canadian Department of National Defence, Paramax, Litton Systems, and British Ministry of Defence.

Employees: 360

UNISYS CANADA INC.

UNIVERSAL ROBOTICS CORPORATION

627 Dudley Avenue
Winnipeg, Manitoba
R3M 1P5

Ph: (204) 452-6500
Fax: (204) 452-1257

Contact:
Mr. Lindsay T. Oliver, President
Mr. Randy Wallman, Executive Vice-President

Description:
The company offers the following services:

- New product development
- Planning for CIM and Flexible Automation
- Factory floor planning through computer animation and graphics
- Machine tool conversions to computer control
- Systems Integration

Universal Robotics Corporation also manufactures the SMARTOOL industrial manipulator for grinding applications in the hydro-electric, aerospace and mining industries.

Subsidiaries:
Abilities Research Inc.
CFH Corporation

Partial Client List:
Manitoba Hydro, Standard Aero, Labour Canada, Canada Employment and Immigration, Government of Canada,
*Complete client list available upon request

Associates: 20

UNIVERSITY OF MANITOBA

Accelerator Centre
Room 223 Allen Building
Winnipeg, Manitoba
R3T 2N2

Ph: (204) 474-9378
Ph: (204) 474-9817

Contact:
Dr. Jasper S.C. McKee, Director

Description:
The Accelerator Centre has the capacity to simulate the solar wind and measure the effect of proton bombardment on materials and devices including computer components. Its facilities can also be used to modify the near surface regions of materials by implanting ions with appropriate energy into them. The Centre has access to neutral hydrogen beams of high flux for civil studies, and is capable of microbeam analysis of materials. Centre staff are expert in vacuum technology, ion source development, computer control, software generation and other aspects of accelerator physics and technology. Current Centre projects include production of radiopharmaceuticals, elemental analysis of medical tissue and ore bodies, research using neutral beams, and implantation studies.

Featured Equipment:
Spiral Ridge Cyclotron (20-50 Mev protons) and a Linear Ion Implantation Accelerator (120 keV)

Major Clients:
Canadian Federal Government

Employees: 5

UNIVERSITY OF MANITOBA

Department of Mechanical Engineering and Industrial Engineering Program

Ph: (204) 474-9804
Telex: 07-587721
Fax: (204) 275-3773

Contact:
Professor Doug W. Ruth

Description:
The Department of Mechanical Engineering and Industrial Engineering Program has a comprehensive array of technical expertise, including but not limited to the following:

- Design and development of computer vision and pattern recognition systems for special applications.
- Development of special CAD/CAM softwares, finite element analysis and graphics packages.
- Material testings and evaluation, failure analysis, fault detection process design.
- Materials for aerospace applications, special heat treating methods, development of special processes.
- Material processing in microgravity.
- Heat transfer and fluid flow in microgravitational environment effective cooling of microelectronic systems.
- Machine tools controls and integrations.
- Kinematics, robots and manipulator systems design.

Employees: 50

UNIVERSITY OF MANITOBA

Geophysical Imaging Laboratory

Room 306-309 Wallace Building
Winnipeg, Manitoba
R3T 2N2
Ph: (204) 474-9833 (Office)
Ph: (204) 474-8416 (Lab)
Fax: (204) 261-7581
E-Mail: WMOON@ccm.UManitoba.CA
GEOPOO@ccm.UManitoba.CA

Contact:

Dr. Wooil M. Moon, Research Coordinator

Description:

The Geophysical Imaging Laboratory at the University of Manitoba has the capability of developing computer software and processing a variety of airborne and satellite-borne geophysical and remote sensing data. Some of the airborne sensors include airborne L-/C-/X-band SAR (synthetic Aperture Radar) (CCRS), total field magnetic systems, spectrometers, MEIS-II, and multi-channel EM systems. Some of the satellite-borne sensors include SEASAT (NASA), MAAGSAR (NASA), Landsat series, SPOT (France), SIR (Shuttle Imaging Radar) series (NASA), GEOSAT (U.S. Navy), NOAA satellite (AVHRR), ERS-1 (to be launched in 1990 by ESA), and RADARSAT (to be launched in 1994 by Canadian Space Agency).

The Laboratory also has a complete processing and imaging capability for conventional and high resolution seismic data for earth subsurface tomography, with applications in non-renewable resource exploration engineering problems such as nuclear waste disposal site study and research in cold regions.

The researchers in the Laboratory are involved in developing a new spatial AI/Expert system for Integration/Imaging of large volume spatial information.

Facilities:

Some of the computer hardware facilities include — ARIES image analysis system based on VAX 11/750 host. SUN Sparc 330, SUN 386i, and Macintoshs (running A/UX) on ethernet. Two workstation access to LSPF (Calgary) through satellite datapac links. Direct access to CRAY X/MP supercomputre (Toronto) for large tasks. Some of the software in use includes AIRES image analysis software, UNIRAS, IEEE digital data processing subroutines, SAC (Seismic Analysis Code), GISs, AutoCad, IT&A Insight (Interactive Seismic Processing Package), complete multi-offset VSP processing package, Inversion and image formation software for SAR data, u-LISP, common-LISP, GRASS, u-Prospector and many other software packages developed in the Laboratory.

Major Clients:

Canadian Federal Government, Manitoba Provincial Government, Swedish State Power Board, Atomic Energy of Canada Ltd. Radarsat Project Office (CCRS)

UNIVERSITY OF MANITOBA

Institute for Technological Development

Room 227
Faculty of Engineering
University of Manitoba
Winnipeg, Manitoba
R3T 2N2
Ph: (204) 474-6200
Ph: (204) 943-8482
Fax: (204) 261-3475
Fax: (204) 275-3773

Contact:

Mr. R.P. (Ray) Hoemsen, P.Eng., Director

Description:

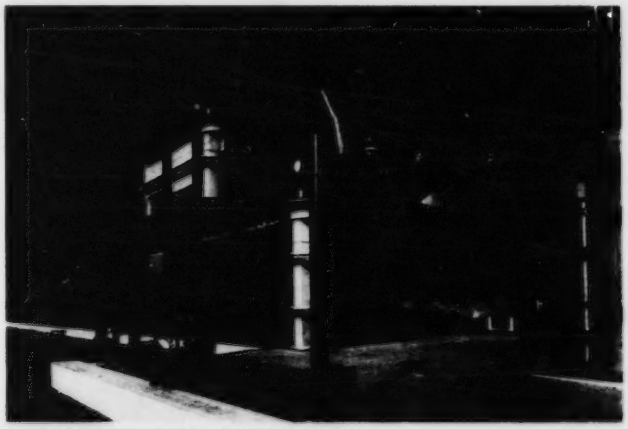
The Institute for Technological Development (ITD) is expert in technology transfer and industrial liaison in technological development. ITD functions as a facilitator to help industry to access the technological resources of the University of Manitoba, particularly in Engineering. ITD also acts as a primary contact for the U of M with the Canadian Space Agency.

ITD also operates and manages the Engineering and Applied Sciences Industrial Affiliates Program. EASIAP is intended to build University/Industry linkages in areas of mutual interest.

ITD, through a Contribution Agreement with the National Research Council, can help industry obtain scientific and technical knowledge, advice and assistance on a confidential basis.

ITD also works closely with the Canadian Patent Office and the Canadian Industrial Innovation Centre.

ITD is a cooperative venture of the Manitoba Research Council, National Research Council, University of Manitoba and Industry.



U OF M GEOPHYSICAL IMAGING LAB.

VANGUARD INDUSTRIES

530 Sheppard Street
Winnipeg, Manitoba
R2X 2P8

Ph: (204) 633-2546
Fax: (204) 665-7618

Contact:
Mr. Don Hedley, General Manager

Description:
Vanguard's large Winnipeg plant manufactures a range of fibreglass materials, including boats and other recreational products. Vanguard, a DSS-approved bidder, and with a QC program in place, is qualified in mould design and construction, and vehicle assembly, and has capabilities for ground station equipment manufacture.

Quality Standards:
Approved bidder for DSS

Facilities:
80,000 sq. ft.

Major Clients:
C.A.E.

Employees: 50

VANSCO ELECTRONICS LTD.

1305 Clarence Avenue
Winnipeg, Manitoba
R3T 1T4

Ph: (204) 452-6776
Fax: (204) 452-7156

Contact:
Mr. E. Van Humbeck, President

Description:
Vansco specializes in the development and manufacture of electronic instrumentation and controls. Its expertise includes industrial and vehicular instrumentation, data communications, local area networks, sensor technology, scientific instrumentation and data loggers. Sixteen R&D workstations on a local area network run CAD software for microprocessor system development, circuit design, and PC layout, and field programmable logic. Vansco's purchasing, manufacturing, testing and quality control stations are also networked to an integrated data base that includes work in process, completed orders and SPC and quality records.

Featured Equipment:
Wave soldering, surface mount assembly with IR reflow, connectorizing and fastener insertion equipment. Encapsulating equipment.

Facilities:
R&D workstations on local area network, CAD software for circuit design PC layout and field programmable logic, microprocessor development systems, automated pick and place for SMT.

Major Clients:
Controlled Environments, Ford New Holland, Transport Canada, Manitoba Hydro, Motor Coach Industries, AECL.

Employees: 40

VISUAL MARKETING LTD.

E-1420 Clarence Avenue
Winnipeg, Manitoba
R3T 1T6

Ph: (204) 284-0815
Fax: (204) 284-0829

Contact:
Keith McKenzie, President
Darlene Mulligan, Marketing Manager

Description:
Visual Marketing Ltd. produces professional video programs, specializing in corporate communications. They have extensive experience in training, marketing, sales, promotional & conceptual programing for private and public corporations. In addition to full broadcast production facilities, they handle scripting, language translations, world standards conversions (PAL-SECAM-NTSC), video tape duplication & film to video tape transfers.

Facilities:
600 sq. ft. sound studio, cameras, lighting, special effects, editing equipment, electronic field production and 16 track recording. Recent upgrades: high resolution computer graphics (35ns), ADO digital video, 2nd editing suite, sound track creation with digital sampling and computerized editing.

Major Clients:
Boeing of Canada, Noranda Explorations, McKim Advertising, Canada Safeway

Employees:
5 full time/freelance specialists employed on a per project basis

WARDROP ENGINEERING INC.

400-386 Broadway Avenue
Winnipeg, Manitoba
R3C 4M8

Ph: (204) 956-0980
Telex: 07-57487
Fax: (204) 957-5389

Contact:
Mr. W.D. Christie, Vice President
Mr. R.E. Derksen, P.Eng.

Description:
Wardrop Engineering Inc. is a multidisciplined Canadian Engineering Company providing a broad range of engineering services to clients throughout the world. One of Wardrop's specialities is the design of aerospace equipment, components and systems. Wardrop's services to the aerospace industry include:

- systems engineering;
- conceptual and detailed design;
- stress, vibration and thermal analysis;
- manufacturing drawings;
- development and prototyping;
- supply;
- project management; and
- quality assurance

Aerospace equipment, components and systems designed and developed by Wardrop include:

- space systems;
- space robotics;
- space systems flight hardware;
- microgravity experimental facilities;
- ground support equipment;
- integration and test facilities; and
- environmental test facilities.

The company offers a wide range of engineering disciplines which include Aerospace, Mechanical, Chemical and Process, Structural/Civil, Electrical, Computer, Public Works, Transportation, Control and Instrumentation, Hydrotechnical, Hydrogeological, and Environmental.

Wardrop personnel have expertise in space systems engineering, aerospace ground support equipment, robotics and remote handling, specialized equipment, computer modelling and environmental test facilities.

Featured Equipment:
Computer facilities include a Local Area VAX Cluster (LAVC) consisting of a MicroVAX 3800 computer, two MicroVAX II mini-computers, 60 IBM/AT and four 386 compatible MS-DOS-based personal computers and a Macintosh IIx and SE. Wardrop is the Prairie Region software distributor for the ANSYS finite element package and the ARIES MCAE software used in the design, analysis, and optimization of engineered products.

Facilities:
40,000 sq. ft.

Major Clients:
National Defence, National Research Council, SPAR Aerospace, SED Systems, European Space Agency, Atomic Energy of Canada, Ontario Hydro, Confidential Japanese Space Contractors

Subsidiaries:
3

Employees: 250 (170 in Winnipeg)

WEATHERTEC SERVICES INC.

298 Garry Street
Winnipeg, Manitoba
R3C 1H3

Ph: (204) 943-3386
Fax: (204) 943-2261

Contact:
Mr. John Junson, General Manager

Description:
WeatherTec Services Inc. is a meterological company serving Industry, Media and Agriculture. This company provides weather consulting and forecasting services by producing computer graphic weather maps and extended forecasts, along with climatological studies of past weather conditions. We have access to all past and current hourly weather reports of temperature, sky condition, precipitation, wind and sunshine. Specialized forecasts can be tailored to specific needs.

Facilities:
WeatherTec offices are located in the Comchec building at 298 Garry Street in Winnipeg. Our computers have direct connection to AES weather circuits and the National Weatherfax Network.

Major Clients:
Grassroots Information Services, Inter-City Gas Co., Manitoba Public Insurance Corp., Winnipeg Free Press, Canadian Territorial Helicopters Inc., Montreal Gazette

Employees: 4

BOEING CANADA TECHNOLOGY LTD.

WEST-CAN INSPECTION LIMITED

22 Ranch Rd.
Winnipeg, Manitoba
R2G 3E1

Ph: (204) 668-7327
Telex: 07-57741
(Brick House)
Fax: (204) 668-7347

Contact:
Mr. Edward Wachal, General Manager, Western Division
Mr. Larry R. Russell, V.P. Technical Operations

Description:
West-Can Inspection is a testing laboratory, offering quality assurance inspection and non-destructive analysis of materials and components. West-Can is experienced in aircraft structural inspection, rocket motor testing, and various cast product inspection, carried out by a skilled, certified staff utilizing a full range of non-destructive test equipment. Its prime interests within the aerospace technology program is the research and development of new materials and component fabrication for engineered segments of the program.

Featured Equipment:
Non-destructive Test Methods Radiographic, Ultrasonic, Eddy Current, Liquid Penetrant, Magnetic Particle

Facilities:
1,500 sq. ft.

Major Clients:
Imperial Oil, Trans Canada Pipeline, Bristol Aerospace, Standard Aero, Air Canada

Subsidiaries:
3

Employees: 20

G.K. YUILL & ASSOCIATES (MAN.) LTD.

200-1200 Pembina Highway
Winnipeg, Manitoba
R3T 2A7

Contact:
Harry Jhinger, President
Dr. G.K. Yuill, Vice-President

Description:
G.K. Yuill & Associates Ltd. is a research and development consultant providing mechanical engineering services to a wide range of Canadian firms. They specialize in computer models and test methods for heat transfer and thermodynamic problems.

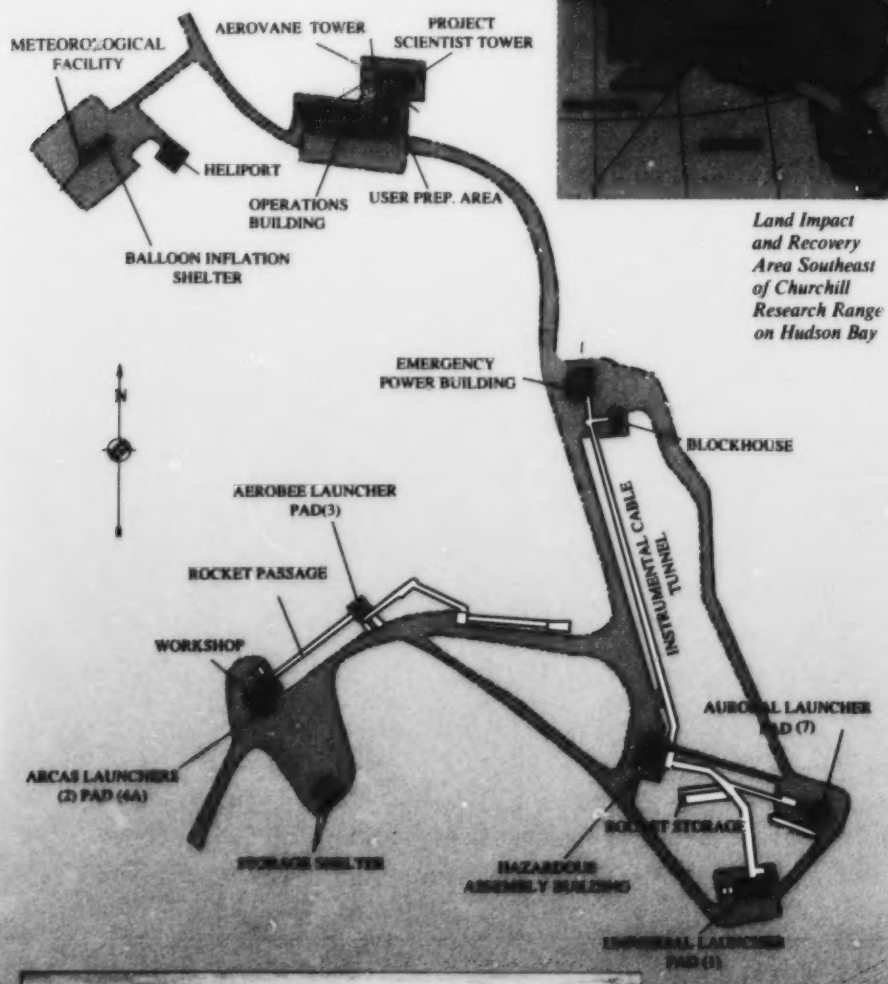
Major Clients:
Canadian Electrical Association, National Research Council, Canada Mortgage and Housing Corporation, American Society of Heating, Refrigeration and Air Conditioning Engineers

Employees: 8

Churchill

RESEARCH RANGE

Plan View of Launch Site



Land Impact and Recovery Area Southeast of Churchill Research Range on Hudson Bay

The Churchill Research Range, the principal base for sounding rocket launches in Canada, remains one of Manitoba's unique aerospace resources. Opened in 1957, in support of research associated with the International Geophysical Year, the Churchill Research Range soon became a mecca for physicists investigating the upper atmosphere.

Its extreme northern location gives the CRR a unique position in the auroral oval, and is an ideal location for the observation of many upper atmosphere phenomena in connection with the international space research agenda for 1992 — The International Space Year, and the initiation of "Mission to Earth." The Range is located on the north-eastern tip of Manitoba, Canada, at approximately 59 degrees North Latitude and 94 degrees West Longitude. The range of azimuth angles through which vehicles can travel is broader than most other ranges.

The Churchill Research Range also offers promising potential as a future site for polar and high inclination orbital launches.

The large land-based impact area facilitates easy payload recovery and makes Churchill an excellent site for microgravity experimentation. The CRR covers approximately 700,000 square kilometres of land and water, including most of Hudson Bay, plus a large tract of uninhabited land in the northeastern section of Manitoba. The impact area extends approximately 800 kilometres in both north-to-south and east-to-west directions.

The Range is remote, yet accessible. Personnel, rockets, payloads and equipment can be transported readily to Churchill via air, rail or ship.

The CRR is an excellent facility for scientific pursuits. While the weather at Churchill is comparable to other northern ranges, the Churchill facility offers underground access tunnels and temperature-controlled launch bays, allowing scientists to work at room temperatures to just moments before a launch.

If you would like further information on Churchill Research Range contact:

Manitoba Industry, Trade and Tourism
Manitoba Aerospace Technology Program
430-155 Carlton Street
Winnipeg, Manitoba, Canada
R3C 3H8

Phone: (204) 945-0124
Facsimile: (204) 945-1354
Telex: 07-587833